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THE  
ZOOLOGICAL RECORD

VOLUME THE THIRTY-SEVENTH.

BEING

RECORDS OF ZOOLOGICAL LITERATURE

RELATING CHIEFLY TO THE YEAR

1900.

BY J. A. THOMSON, R. LYDEKKER, R. BOWDLER SHARPE, G. A. BOULENGER,  
W. A. HERDMAN, E. R. SYKES, E. A. SMITH, G. C. CRICK, A. WILLEY,  
A. W. BROWN, D. SHARP, F. A. BATHER, AND E. A. MINCHIN.

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The Editor thanks those Societies and individuals who have forwarded works and papers for the purposes of the Record, and suggests that Societies publishing Zoological Papers would much facilitate the work of the Recorders by forwarding a separate copy of each Zoological Memoir they publish to the Editor for the use of the Recorder. This is preferable to sending the entire volume, because each paper can go directly to the Recorder it concerns.



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## PREFACE.



THE thirty-seventh volume of the Zoological Record includes more matter than any of its predecessors ; the number of pages being about 180 more than were in the volume of last year. The index of new names amounts to 2102 entries ; the previous maximum for any year having been 1707, in 1895. Notwithstanding the increased work involved by this augmentation, the volume appears about the usual time, and the Editor feels correspondingly grateful to the Recorders, all of whom have been quite punctual in delivering their contributions. The list of abbreviations has again been thoroughly revised, Prof. E. A. Minchin having kindly given much assistance in this task.

The Editor is also glad to take this opportunity of thanking the Librarians who have assisted him in keeping accurate the indications of the Libraries in which the various periodicals are to be found.

D. SHARP.

CAMBRIDGE,

*October 25th, 1901.*

APR 30 1902



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By the EDITOR.





ALPHABETICAL LIST  
OF THE  
ABBREVIATIONS  
USED IN THE  
ZOOLOGICAL RECORD, VOL. XXXVII, 1900,  
FOR THE  
TITLES OF THE JOURNALS, TRANSACTIONS, ETC.  
THAT CONTAIN ZOOLOGICAL PAPERS;  
WITH INDICATIONS OF SOME OF THE PRINCIPAL  
LIBRARIES  
IN WHICH THE BOOKS ARE CURRENT.

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THE primary object of this list is to enable those using the Record to find with ease the full title of a Journal they see quoted in an abbreviated form. The arrangement is therefore a simple alphabetical list of the abbreviations, uncomplicated by syllabic or verbal limitations.

The list has also to serve the Recorders and others as a list of Journals, and for this purpose it is important that it should be fairly complete as regards current periodicals. In order to increase the utility of the list, the abbreviations have been made on a uniform system; but a few exceptions have, in practice, been found necessary. The chief points that have been kept in view in constructing the abbreviations may be briefly stated as follows:—

The words selected as distinctive in each title are reduced in most cases to three or four.

A distinct abbreviation is used for each different word, and the same abbreviation for the same word is used throughout the list.

Accents are omitted. As a rule the first word of the title is represented by an abbreviation, but this rule is departed from in the case of articles and prepositions, and occasionally in the case of adjectives that are useless for distinctive purposes. Thus "Annual Report" becomes "Rep.," and "Occasional Papers" becomes "Pap." Such adjectives as "New" and "Royal" are omitted, except when necessary for distinctive or other purposes.

The consecutive order of the words of the title is maintained in the abbreviation, except in a few cases where the arrangement of the words in the title is very unusual or faulty.

As an example of the form of abbreviation that is aimed at, we may take Bull. Soc. Moscou. The name of the locality is given at greater length than the more frequently used portions of the abbreviation.

After the titles, the place of publication is given, and this is followed by letters indicating some of the principal libraries in which the works may be consulted. The explanation of these letters is as follows:—

- N. = British Museum Natural History: general library.  
 Nz. = " " library, zoological department.  
 Ng. = " " " geological " "  
 K. = Science library; South Kensington Museum.  
 R. = Royal Society library.  
 Z. = Zoological Society library.  
 L. = Linnean  
 C. = Cambridge University library.  
 C, p or (C) p = Cambridge Philosophical Society library.  
 b, or g, or y, after C, or (C) = Cambridge Balfour, or Woodwardian Museum, or Physiological libraries respectively.  
 O. = Radcliffe library, Oxford.  
 § is prefixed to titles added since the last list, and to changes of titles when important.

*Abeille*—L'Abeille: Journal d'entomologie publié par la Société entomologique de France. (Paris, 8vo.) Nz. C.

*Abh. Ak. Berlin*—Abhandlungen der königlichen Akademie der Wissenschaften zu Berlin. (Berlin, 4to.) N. K. R. Z. L. C, p. O.

*Abh. Bayer. Ak.*—Abhandlungen der mathematisch-physikalischen Classe der königlichen Bayerischen Akademie der Wissenschaften. (München, 4to.) N. K. R. Z. L. C, p. O.

*Abh. Böhmisch. Ges.*—Abhandlungen der mathematisch-naturwissenschaftlichen Classe der k. Böhmischen Gesellschaft. [Called also] Rozprawy tridy mathematicko-přirodvěcke královské Ceske společnosti Nauk. (Prag, 4to.) N. K. R. L. C, p.

*Abh. deutsch. Seefisch.-Ver.*—Abhandlungen des deutschen Seefischerei-Vereins. (Berlin, 4to.) Nz. C.

*Abh. geol. Karte Elsass*—Abhandlungen zur geologischen Spezial-Karte von Elsass-Lothringen. (Strassburg, 8vo.) Ng.

*Abh. geol. Landesanst. Darmstadt*—Abhandlungen der grossherzoglich Hessischen geologischen Landesanstalt zu Darmstadt. (Darmstadt, 8vo.) Ng.

*Abh. geol. Reichsanst.*—Abhandlungen der Kaiserlich-Königlichen geologischen Reichsanstalt. (Vienna, 4to.) Ng. R. L. C, p.

*Abh. Ges. Görlitz*—Abhandlungen der naturforschenden Gesellschaft zu Görlitz. (Görlitz, 8vo.) N. K. R.

*Abh. Ges. Götting.*—Abhandlungen der königlichen Gesellschaft der Wissenschaften zu Göttingen. Mathematisch-Physikalische Klasse. Neue Folge. (Göttingen, 4to.) N. R. Z. L. C, p. O.

*Abh. Ges. Halle*—Abhandlungen der naturforschenden Gesellschaft zu Halle. (Halle, 4to.) N. K. R. Z. L. C. O.

*Abh. Ges. Isis*—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (Dresden, 8vo.) N. K. Z. C.

*Abh. Ges. Königsb.*—[Part of *Schr. Ges. Königsb.*, q.v.]

- Abh. Ges. Nurnberg*—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (Nürnberg, 8vo.) N. K. C.
- Abh. Ges. Wien*—[Part of *Verh. Ges. Wien*, q.v.]
- Abh. Hamburg. Anst.*—[Part of *Jahrb. Hamburg. Anst.*, q.v.]
- Abh. Mus. Dresden*—Abhandlungen und Berichte des königlichen zoologischen und anthropologisch-ethnographischen Museums zu Dresden. (Berlin, 4to.) Nz. Z. C.
- Abh. Preuss. geol. Landesanst.*—Abhandlungen der königlich Preussischen geologischen Landesanstalt (Neue Folge). [Formerly *Abh. geol. Specialkarte von Preussen und den Thüringischen Staaten.*] (Berlin, 8vo.) Ng. K. C.
- Abh. Sachs. Ges.*—Abhandlungen der k. Sächsischen Gesellschaft der Wissenschaften. (Leipzig, 4to.) N. K. R. C, p.
- Abh. Schweiz. pal. Ges.*—Abhandlungen der Schweizerischen paläontologischen Gesellschaft. Mémoires de la Société Paléontologique suisse. (Basel, &c., 4to.) Ng. R. Z. (C) g. O.
- Abh. Senckenb. Ges.*—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft. (Frankfort a.-M., 4to.) N. K. R. Z. L. C. O.
- Abh. Ver. Bremen*—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen. (Bremen, 8vo.) N. K. R. Z. L. C.
- Abh. Ver. Hamburg*—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturwissenschaftlichen Verein in Hamburg. (Hamburg, 4to.) N. K. R. Z. L. C, b.
- Abh. Ver. Karlsruhe*—[Vide *Verh. Ver. Karlsruhe*.]
- Abh. Ver. Kassel*—[Issued with *Ber. Ver. Kassel*, q.v.]
- Abh. Ver. Lotos*—Abhandlungen des deutschen naturwissenschaftlich-medicinischen Vereines für Böhmen "Lotos." (Prag, 4to.) N. C.
- Acta Ac. German.*—N. Acta Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ naturæ curiosorum. [Called also] Verhandlungen der k. Leop.-Carol. deutschen Akademie der Naturforscher. (Halle, 4to.) N. K. R. Z. L. C, p. O.
- Act. Ac. Cordoba*—Actas de la Academia nacional de Ciencias en Córdoba. (Buenos Aires, 4to.) N. R. Z. L.
- Acta Soc. Faun. Fenn.*—Acta Societatis pro Fauna et Flora Fennica. (Helsingfors, 8vo.) N. R. L.
- Acta Soc. Lund.*—Acta regiæ Societatis physiographicæ Lundensis. [Published as part of *Acta Univ. Lund.*, q.v.]
- Acta Soc. Sci. Fenn.*—Acta Societatis Scientiarum Fennicæ. (Helsingfors, 4to.) N. K. R. Z. (C) p.
- Acta Soc. Upsal.*—Nova Acta regiæ Societatis Scientiarum Upsaliensis. (Upsala, 4to.) N. K. R. Z. L. C, p.
- Acta Univ. Lund.*—Acta Universitatis Lundensis. [Called also] Lunds Universitets Årsskrift, [and includes] Acta regiæ Societatis physiographicæ Lundensis, [also called] Kongl. fysiografiska Sällskapets i Lund Handlingar. (Lund, 4to.) N. K. R. L. C, p.
- Act. Soc. Bordeaux*—Actes de la Société Linnéenne de Bordeaux. (Bordeaux, 8vo.) N. Z. C.
- Act. Soc. Chili*—Actes de la Société scientifique du Chili. (Santiago, 4to.) R. Z.

- Act. Soc. Espan.*—Actas de la Sociedad española de historia natural. (Madrid, 8vo.) N. R. Z. C.
- Act. Soc. Helvet.*—Actes de la Société Helvétique des Sciences naturelles. [Called also] Verhandlungen der schweizerischen naturforschenden Gesellschaft. (Basel, &c., 8vo.) N. K. R. L. C. O.
- Afh. Mus. Lund.*—E Museo Lundii. En Samling af Afhandlinger. (Kjobnhavn, 8vo.) N. R. Z. L.
- Agric. Gaz. N. S. W.*—The Agricultural Gazette of New South Wales. (Sydney, 8vo.) Nz. R.
- § *Allg. Zeitschr. Ent.*—Allgemeine Zeitschrift für Entomologie. Organ der "Allgemeinen entomologischen Gesellschaft." (Neudamm, 8vo.) [Formerly called *Illustr. Zeitschr. Ent.*]
- Amer. Geol.*—The American Geologist, a Monthly Journal of Geology and allied Sciences. (Minneapolis, 8vo.) Ng. K. O.
- § *Amer. J. Physiol.*—The American Journal of Physiology. (Boston, 8vo.) N. K. R. (C) y. O.
- Amer. J. Sci.*—The American Journal of Science. (New Haven, 8vo.) N. K. R. Z. C, p. O.
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- Amer. Natural.*—The American Naturalist. (Philadelphia, 8vo.) N. K. Z. L. C, b. O.
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- Ann. Scott. Nat. Hist.*—The Annals of Scottish Natural History: a quarterly magazine, with which is incorporated "The Scottish Naturalist." (Edinburgh & London, 8vo.) N. Z. L. C.



- Ann. Soc. Agric. Lyon*—Annales de la Société d'Agriculture, Histoire naturelle et Arts utiles de Lyon. Septième série. (Lyons & Paris, 8vo.) N. R. L.
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- Arch. anat. micr.*—Archives d'anatomie microscopique. (Paris, 8vo.) N. (C) b. O.
- Arch. Anthrop.*—Archiv für Anthropologie. Zeitschrift für Naturgeschichte und Urgeschichte des Menschen. [Includes *CB. Ges. Anthropol.*] (Brunswick, 4to.) R. O.
- Arch. Anthrop. Geol. Schleswig.*—Archiv für Anthropologie und Geologie Schleswig-Holsteins und der benachbarten Gebiete. (Kiel, Leipzig, 8vo.) N.
- Arch. Biol.*—Archives de Biologie. (Gand & Paris, 8vo.) Nz. K. R. Z. L. C, b. O.
- Arch. Dorpat. Ges.*—Archiv für die Naturkunde Liv-, Ehst- und Kurlands. Herausgegeben von der Dorpater Naturforscher-Gesellschaft. Zweite Serie. Biologische Naturkunde. (Dorpat, 8vo.) K. N. Z.
- Arch. Entwickmeh.*—Archiv für Entwicklungsmechanik der Organismen. (Leipzig, 8vo.) K. Z. L. (C) b. O.
- Arch. ges. Physiol.*—Archiv für die gesammte Physiologie des Menschen und der Thiere. [Pflüger.] (Bonn, 8vo.) K. R. C, p, y. O.
- Arch. ital. Biol.*—Archives italiennes de Biologie. Revues, résumés, reproductions des travaux scientifiques italiens. (Turin, 8vo.) N. C, y. O.
- Arch. Landesdf. Bohmen*—Archiv für naturwissenschaftliche Landesdurchforschung von Böhmen. (Prag, 8vo.) N. Z. C.
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- Arch. miss. Sci.*—Nouvelles archives des missions scientifiques et littéraires, choix de rapports et instructions, &c. (Paris, 8vo.) N.
- Arch. Mus. Lyon*—Archives du Muséum d'histoire naturelle de Lyon. (Lyon, 4to.) N. R. Z. O.
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# THE ZOOLOGICAL RECORD

## FOR 1900.

### I. GENERAL SUBJECTS.\*

BY

Prof. J. ARTHUR THOMSON, M.A.

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#### INTRODUCTION.

FOLLOWING the order of the subject-index we may first note the continuation of Bronn's "Thierreich" (97), and of "Das Tierreich" (644). Noteworthy among text-books are the co-operative treatise by LANKESTER and others (405, 406), EASTMAN's edition of Zittel's Palæontology (760),

\* It will be understood that papers recorded here may also be found under the various classes, II—XVIII. They are included here because of their bearing on general questions which, if not obvious, will be made apparent in the Subject-Index.



and the last volume of the translation of KORSCHULT and HEIDER's *Embryology of Invertebrates* (396). The revised edition of PEARSON's "Grammar of Science" (541) may be mentioned as the most important among general essays, and the life of HUXLEY (350) as the most important historical contribution.

Concerning distribution, we may especially mention CHUN's "Deep-Sea" (133), the beginning of RÖMER & SCHAUDINN's *Fauna Arctica* (609), and BURCKHARDT's work on the zooplankton of Swiss lakes (107 & 108).

Among morphological contributions TRAQUAIR's address on the bearings of fossil ichthyology on the problem of evolution (697), HALLER's comparative study of Vertebrate brains (300), FÜRBRINGER's investigation of the pectoral apparatus (245), and RÖRIG's laws on antler-evolution (610), are representative of the highest standard of work. The third volume of OPPEL's great treatise on the comparative histology of Vertebrates (525), the translation of the work of EHRLICH and LAZARUS on the blood (199), HIS's study in histogenesis (337), and the separate publication of RABL's comparative histology of the lens (579), may illustrate the year's progress in minute anatomy.

From among many physiological contributions of importance we may select WALLER's "Last sign of life" (729), BEARD's "True function of the thymus" (53), JENNINGS' studies on the Protozoa (360-365), LOEB's investigations on the rôle of ion-proteid compounds in vital phenomena (427), the study of colour-change in *Hippolyte varians* by GAMBLE and KEEBLE (253, 375), the little book on orientation by BONNIER (77), and THORNDIKE's lectures on instinct and associative processes (688 A & 688 B). There are others equally important, but these are typical.

The objective study of protoplasm may be represented by the works of WILSON (745) and HEIDENHAIN (314); the speculative discussion of living matter by GIGLIO-TOS's book (276). REINKE's studies on cell-division (602 & 603) are outstanding among the year's contributions to the problem of mitosis.

BEARD's paper on the morphological continuity of the germ-cells in the skate (52), PAULCKE's study of the queen-bee's ovary (538), and the investigations of spermatogenesis by EISEN (206 & 207), LOISEL (438-444), and REGAUD (589-599), may represent the papers cited under section 6; but greater interest perhaps attaches to the experiments and discussions on "artificial parthenogenesis," notably those of LOEB (429-432).

WILSON contributes a fine essay on modern problems of development (745 A) and a revised edition of his invaluable text-book "The cell in development and inheritance" (745); KEIBEL continues his "norm-tables" (376); FÉRÉ adds to his curious experiments on eggs (223-227); and there are valuable experimental studies by LOISEL (445-447), DRIESCH (182 & 183), HERBST (319), SCHIMKEWITSCH (633 & 634), BATAILLON (40-46).

Regarding reproduction and sex, the studies on nematodes by MAUPAS (476) are undoubtedly the most remarkable contributions of the year. Also of great importance is the study of the sexual season in mammals by HEAPE (312). Mention should also be made of CUNNINGHAM's book on sexual dimorphism (150), CUÉNOT's discussion of the determination of sex (149), and RÖRIG's study of antlers (611). Among a multitude of studies on regeneration, those of MORGAN (506-511A), TORNIER (694), and PRZIBRAM (569) seem most important.

As to heredity, we may direct particular attention to PEARSON's discussion of reversion (543), HAMILTON's address on heredity and disease (302), SOMMER's criticism of BROWN-SÉQUARD's experiments on epilepsy in guinea-pigs (664). There is at once historical and personal interest in VIRCHOW's lecture on the continuity of life as the foundation of the modern biological outlook.

Evolutionary literature may be illustrated by a variety of types:—

TRAQUAIR's address (697), VERNON's & WARREN's studies on reaction to environment (707 & 732), DE VRIES's mutation-theory (722), HAECKER's Song of Birds (299), CUNNINGHAM's Sexual Dimorphism (150), EIGENMANN's studies on cave animals (200-205), PLATE's discussion of the selection principle (556) and PEARSON's continuation of his data for the problem of evolution in man (542).

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1. ABELSDORFF, G. Zur Erforschung des Helligkeits- und Farbensinnes bei Menschen und Tieren. Verh. physiol. Ges. Berlin in Arch. Physiol. 1900, pp. 561 & 562.  
ABRAHAM, K. [See KEIBEL, F. (376).]
2. ABSOLON, K. Einige Bemerkungen über mährische Höhlenfauna. Zool. Anz. xxiii, pp. 1-6, 57-60, 189-195.
3. ACLOQUE, A. Faune de France, contenant la description des espèces indigènes, disposées en tableaux analytiques, et illustrées de figures représentant les types caractéristiques des genres. T. I. Vertebrata. 18mo, Paris, 556 pp., 1124 figg.
4. \*——. Sous le microscope. 8vo, Paris, 320 pp., 320 figg.
5. \*——. Le monde sous-marin. 8vo, Abbeville, 319 pp., 236 figg.
6. ADAMKIEWICZ, A. Zum Blutgefäßapparat der Ganglienzelle. Anat. Anz. xvii, pp. 44-48.
7. ADAMS, C. C. Variation in *Io*. P. Amer. Ass. xlix, pp. 208-225, 27 pls.
8. \*AFLALO, F. G. A walk through the Zoological Gardens. 8vo, London, 232 pp.
9. AGASSIZ, A. Cruise of the Albatross. Science xi (II) pp. 92-98, (III) pp. 288-292, (IV) pp. 574-578.
10. AICHEL, O. Vergleichende Entwicklungsgeschichte und Stammesgeschichte der Nebennieren. Ueber ein neues normales Organ des Menschen und der Säugethiere. Arch. mikr. Anat. lvi, pp. 1-80, 3 pls. & 1 fig.
11. ALBRECHT, E. Die Ueberwindung des Mechanismus in der Biologie. Biol. Centrbl. xxi, pp. 97-111.
12. \*ALESSI, C. Rapporti somatici nella scala zoologica. Avola, 63 pp.
13. ALLBUTT, CLIFFORD. Historical aspects of the discovery of the circulation of the blood. Nature lxii, pp. 630-632.  
Abstract of Harveian Oration.
14. AMBERG, C. Beiträge zur Biologie des Katzenses. Inaug. Dissert. Vierteljahrsh. Ges. Zurich xlv, pp. 59-136, 8 figg., 6 tables.
- 14A. AMBERG, O. Die von Schröter-Amberg modifizierte Sedgwick-Rafter'sche Methode der Planktonzählung. Biol. Centrbl. xx, pp. 283-288.

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16. ANDRES, ANGELO. La misurazione razionali degli organismi col metodo dei millesimi somatici or millesomi (somatometria). *Rend. Ist. Lombardo* xxxiii, pp. 398-429.
17. ANDREWS, C. W. A monograph of Christmas Island (Indian Ocean); Physical features and geology. By C. W. Andrews. With descriptions of the Fauna and Flora by numerous contributors. London, xi+337 pp., 21 pls., map.
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37. —. Note on a possible mode of origin of some nuptial and sexual characters on Vertebrates. Anat. Anz. xviii, pp. 47 & 48.
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43. —. La segmentation parthénogénétique expérimentale chez les Amphibiens et les Poissons. Op. cit. cxxxi, pp. 115-118.
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45. —. La résistance des œufs d'*Ascaris* et la pression osmotique. T. c. pp. 435-437.
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## 2. DISTRIBUTION.

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Faunistic :—Bionomics of the Katzenssee ; AMBERG (14).—Variations in the Plankton of Lake Chauvet ; BRUYANT (100).—The 'halophilous' fauna of Auvergne ; BRUYANT & EUSEBIO (101).—Fauna of the salt 'limane' at Odessa ; BUTSCHINSKY (109).—Physical conditions and geographical distribution of Atlantic Copepoda ; CLEVE (135).—The impoverishment of the Sea ; GARSTANG (257).

Third ed. of Eysen's Natural History of microscopic freshwater organisms ; SCHÖNICHEN & KALBERLAH (642).—Fauna of the "Kieler Förde" ; BUEKEL (105).—New additions to the Baikal fauna ; DYBOWSKI (192).—Bionomics of the Neuenburger-See ; FUHRMANN (247).—Fauna 'de la fosse de la Hague' (Manche) ; GADEAU DE KERVILLE (249).—Pontus and the Mediterranean ; KOBELT (387).—Kobelt's views in regard to the Mediterranean fauna ; GIGLIOLI (275).—Distribution and origin of Japanese fauna ; JACOBI (357).—Fauna in stagnant waters of the Skären islands ; LEVANDER (421).—Fauna of Finnish lakes ; LEVANDER (423).—Biology of the Caspian Sea ; LÖNNBERG (434).—Animal life in water-basins of varying salinity ; NORDENSKIÖLD (521).—Trawlings in the Skager Rack and Cattegat ; PETERSEN & LEVINSEN (551).—Fauna of Stuhmer See ; SELIGO (652).—Marine biology at Beaufort ; WILSON, H. V. (746).

Cave-Fauna of Moravia ; ABSOLON (2).—North American cave-animals ; EIGENMANN (200, 202).—Plankton of Echo River, Mammoth Cave ; KOFOID (390).—Cave-fauna of Krim ; LEBEDINSKI (409).

Plea for the study of limnobiology ; WARD (730).—Problems of limnology ; BIRGE (67).—Causes of the depopulation of certain rivers ; RASPAIL (586).—Fauna of mountain streams ; ZSCHOKKE (761).—Of mountain lakes ; ZSCHOKKE (762).

Comparative study of methods of plankton measurement ; WARD (731). Methods of plankton-computation ; AMBERG (14A).—Animal plankton from Jan-Mayen to the Norwegian coast ; AURIVILLIUS (22).—Plankton



collections by means of the pump-method; BACHMANN (24).—Conditions favourable for plankton collecting on the high seas; BUCHET (103).—Plankton of the southern Atlantic and southern Indian Ocean; CLEVE (136).—Plankton of the Red Sea; CLEVE (137).—Causes of plankton accumulations; CURRERI (152).—Potamoplankton of the Volga; ZYKOFF (763).—Plankton of Lunzer-See; VON KEISSLER (377).—Plankton of Mammoth Cave; KOFOID (390).—Plankton-work of Illinois Biological Station; KOFOID (391).—Autumn and winter plankton in Finnish waters etc.; LEVANDER (422).—A general introduction to the study of the plankton of freshwater lakes; MARSH (466).—Zoo-plankton of 'the old Danube' at Vienna; STEUER (672).—Two collections of tropical and more northerly plankton; THOMPSON (687).—Relation of freshwater plankton to the specific gravity of the water; WESENBERG-LUND (736).—Specific gravity of freshwater animals in relation to habits, development, and composition; WILLIAMS (742).

Faunistic regions:—The lower and middle Sonoran zones in Arizona and New Mexico; COCKERELL (138).—On the zoo-geographical relations of Africa; GILL (278).—History of the neo-tropical region; IHERING (352).—Geological and faunal relations of Europe and America during the tertiary period, and the theory of the successive invasions of an African fauna; OSBORN (527).—Genesis of mid-Pacific faunas; PILSBRY (555).—Fauna arctica; RÖMER & SCHAUDINN (609).—Animal life of equatorial East Africa; SCHILLINGS (632).—Distribution of Vertebrate animals in India, Ceylon, and Burma; BLANFORD (69A).—Vertebrate fauna of France, with analytical tables and diagnoses; ACLOQUE (3).

Travels and Explorations:—Cruise of the Albatross; AGASSIZ (9).—Monograph of Christmas Island; ANDREWS (17).—Marine Fauna of Christmas Island; ANDREWS and others (18).—Through Asia Minor into the Bulghar-Dagh; BODEMEYER (71).—A naturalist's travels in tropical South America; BÜRGER (104).—The German Deep-Sea Expedition; CHUN (133 & 134).—Zoological collecting in Jamaica; CONANT (140).—From the Antilles to the Far West; DOFLEIN (177).

Zoology of the Horn expedition; EATON (193).—Kilimandjaro; MEYER (491).—Second cruise of the "Princess Alice II"; PRINCE OF MONACO (499).—Scientific expeditions of the Prince of Monaco; RICHARD (606).—Belgian antarctic expedition; PRUVOT (568).—The German Deep-Sea Expedition; WINTER (751).—Towards the South Pole; RACOVITZA (582).—Sport and travel, East and West; SELOUS (653).—Natural History, journey to Northern British Columbia, Alaska, and the North-west Territory; STONE (676).

Cheap edition of Darwin's voyage of the "Beagle"; DARWIN (161).—Cheap edition of "Travels on the Amazon"; WALLACE (727).

Notes on the zoological garden of Berlin; BLAAUW (70).—Encrusting animals; COUPIN (143).

### 3. MORPHOLOGICAL.

#### a. *Taxonomy and Anatomy.*

The species and the race; SANSON (629).—Homology and individual peculiarity; RABL (580).

A phylogenetic study, — Monoblasta — Polyblastia — Polycellularia; SCHLATER (636).

Bearings of fossil Ichthyology on the problem of evolution; TRAQUAIR (697).—Origin of Vertebrates; GASKELL (259).—Hypotheses as to the origin of paired limbs of Vertebrates; GRAHAM KERR (378).—"Somatic relations in the Zoological scale"; ALESSI (12).—Homology and Analogy;

LE DANTEC (415).—The problem of metamerism, and a suggested origin of segmented worms; BERNARD (59).—Tendencies in modern morphology; GARBOWSKI (254).—The theory of the germinal layers; GARBOWSKI (254).—Secondary body-cavity, its supposed excretory significance; MEYER (490).—Primary segments of the Vertebrate head; HILL (334).—Morphology of the roof and lateral recesses of the fourth ventricle; BLAKE (68).—Comparative morphology of Vertebrate brains; HALLER (300).—Comparative anatomy of the arteries of the brain and spinal cord in Vertebrates; HOFMANN (339).—Parietal organs and paraphyses; ROHON (613), STUDNIČKA (680).—Comparative study of the cervical sympathetic system in the Vertebrate series; JAQUET (359).

Phylogenetic laws of antler-evolution; RÖRIG (610).—Comparative study of the ontogeny and phylogeny of the supra-renals; AICHEL (10).—The old mouth and the new; FÜRBRINGER (244).—Comparative anatomy of the pectoral apparatus and shoulder muscles; FÜRBRINGER (245).—The ossicula auditus; KINGSLEY (383).—Phylogeny of hair; BRANDT (93).

## b. *Histology.*

Vol. III. of Text-book of the comparative histology of Vertebrates; OPPEL (525).—Atlas of histology; RABAUD & MONTPELLARD (577).—On the structure of the nerve-cells in various animals; HOLMGREN (341, 344).—Vascular apparatus of ganglion-cells; ADAMKIEWITZ (6).—Note on "Intracellular canaliculi" of spinal ganglion cells; BETHE (63); saccular cells of nerve-cells; HOLMGREN (343).—The neurofibrils in ganglion cells and their relation to Golgi's nets; BETHE (65).—Structure of the nerve cells of the cerebral cortex; GOLGI (286).—Structure of medullary nerve-fibres; GOLGI (287).—Fine structure of optic nerves; GREEF (289).—Structure and micro-chemistry of nerve-cells; SCOTT (650).—Minute anatomy of the sympathetic ganglia in different classes of Vertebrates; HUBER (348).—Morphology of the neuron; VERWORN (708).—Evolutionary transformations of the nerve-cell; DELL' ISOLA (356).—Structure of medullated nerve-fibres; SALA (626).—Reissner's fibre in the canalis centralis of Vertebrates; SARGENT (630).—Minute structure of ganglion-cells; STUDNIČKA (678).—The ependym of the nervous central organs; STUDNIČKA (679).

Histology of the blood, normal and pathological; EHRLICH & LAZARUS (199).—On the granules of the red blood corpuscles; GIGLIO-TOS (277).—Microcrystallographic studies on Vertebrate blood; ROBERT (388).—Persistence of a nucleus in adult mammalian red blood corpuscles; MARCHESINI (461).—On the causes of the shape of non-nucleated blood corpuscles; MYERS (516).—Erythrocytes and blood-plates; SACERDOTTI (625).—A study in histogenesis, leucoblast and angioblast; HIS (337).—Summary as to histology and histogenesis of muscular tissue; HESSE (331).—Nuclear-multiplication in cross-striped muscle; GODLEWSKI (283).—Muscle-spindles; BAUM (49).—Difference of muscles in cold- and warm-blooded animals; ROLLETT (615).—Comparative studies on the structure of the retina; BERNARD (58).—Microscopic structure of the retina; GREEF (289).—The neuron theory in the light of recent discoveries; PARKER (534).—Criticism of the "Neuron Theory"; HILL (333).—General discussion of the neuron; VERWORN (708).

Structure of neuroglia; JOSEPH (371).—Degeneration, senility and death of nerve-cells; MARINESCO (465).—Structure of nerve-cells in starved animals; MARTINOTTI & TIRELLI (470).—Summary of modern conclusions as to the fine structure of the nervous system; MOLLIER (498).—Comparative histology of the lens; RABL (579).

Muscle spindles, nuclei and position of motor nerve-endings; SIHLER (658).—Connective tissue of smooth muscle and the so-called intercellular

bridges; HENNEBERG (317).—Cementing substance, matrix, epithelium, and endothelium; WALDEYER (726).—Endochondral ossification; KAZZANDER (374).

Physiology of digestion; LECONTE (410).—Rôle of the ergastoplasm in secretion; GARNIER (255).—Mitochondria and secretory granulations; BENDA (55).—Fine structure of gland-cells; GOLGI (288).—Histology of carotid gland; KOHN (392).—On the fine structure of stratified epithelium; FOÀ (235).—Changes of structure in the pancreas cells; MATHEWS (475).—Secretion in the granulose glands of the Salamander; PHISALIX (554).

Bütschli's work on the structure of coagulable substances; SCHUBERG (643).

#### 4. PHYSIOLOGICAL.

##### a. *General.*

Lessons in experimental physiology; DUBOIS & COUVREUR (189).—Revised ed. of Lessons in Elementary Physiology; HUXLEY (351).—The last sign of life; WALLER (729).—Theory of living matter, assimilation, reproduction &c.; GIGLIO-TOS (276).—Nature and origin of protoplasm; TURNER (700).—Chapter on "Life" in revised ed. of "Grammar of Science"; PEARSON (541).

##### b. *Particular Functions.*

Hæmatic copper and the respiratory capacity of hæmocyanin; DHÉRE (173).—On the normal presence of copper in the animal series; DUBOIS (186).—Localisation, elimination, and origin of arsenic in animals; GAUTIER (264).—Rôle of arsenic in the animal economy; GAUTIER (265).—Physiology and growth-mechanism of the vascular system; FUCHS (243).—On a hitherto unrecognised form of blood-circulation without capillaries in Vertebrata; MINOT (493).—Auto-oxidation; MANCHOT (459).

True function of the thymus; BEARD (53).—Physiology of secretion; MATHEWS (475A).—Import of the islands of Langerhans in the pancreas; SCHULZE (648).—The carotid gland and its relation to the suprarenal capsule; SWALE VINCENT (718).—Remarks on internal secretion and the phylogeny of the suprarenal capsule; SWALE VINCENT (718).—Supposed excretory significance of the secondary body-cavity; MEYER (490).—Osmotic communication between the interior of the marine invertebrate and the milieu; QUINTON (572).—Permeability of the body-wall to water and salts; QUINTON (573).

On the formation of peptone from albumen; BOKORNY (74).—Formation and growth of the Molluscan shell; STEMPELL (671).—Observations on digestion and the formation of carbohydrates in *Pelomyxa palustris*; ŠTOLC (673).

Influence of electric currents on simple organisms; CARLGREN (118).—Influence of electric currents on developing tadpoles; CAPRIATI (117).—Reactions of certain Infusorians to the electric current; PEARL (540).—Reactions of unicellular organisms to various stimuli; JENNINGS (360–363).—Reaction of *Amæba* to lights of different colour; HARRINGTON & LEAMING (309).—Study of the movements of Protozoa etc.; JENNINGS (364 & 365).

Comparative physiology of compensatory movements; LYON (452).—Correlation between growth and food-supply in starfish; MEAD (485).—Uselessness of lecithin as a stimulus to growth; WILDERS (741).—Theory of immunity; EHRLICH (198).—Mechanism of biophotogenesis; DUBOIS (187).—Influence of sterilised air on animals; KIJANIZIN (381).—Influence



of surrounding temperature during hibernation; DUBOIS (188).—Latent life as an adaptation to cold or drought; LALOY (403).—The rôle of ion-proteid compounds in vital phenomena; LOEB (427).—The poisonous character of a pure NaCl solution; LOEB (427).—On the different effect of ions upon myogenic and neurogenic rhythmical contractions and upon embryonic and muscular tissue; LOEB (428).—Import of salts in the life of organisms; RYWOSCH (624).—Chemistry of the animal organism; DE VARIGNY (704).

Seasonal changes in the fatty content of fat-bearing organs; FUNKE (248).—Renal function of genital organs of Holothuroids; RUSSO (623).—Right- and left-handedness; LUEDDEKENS (451).—Clamp and other mechanisms in animals; THILO (685).

### c. *Pigmentation and Colour.*

Study of colour-change in *Hippolyte varians*; GAMBLE & KEEBLE (253), KEEBLE & GAMBLE (375).—Changes of colour in *Schistocerca*; KÜNKEL D'HERCULAI (399).—Spongiorporphyrin, MACMUNN (457).—Influence of different rays on colouration; NENÜKOW (517).

Problem of animal pigments; PROWAZEK (567).—Animal chlorophyll; DANILEWSKY (160).—Development of the pigment and colour pattern in Coleoptera; TOWER (695).—Markings and colouration of birds; TRIPS (698).—Development of colour in moths and butterflies; MAYER (484A). See also INSECTA.

### d. *Nervous and Sensory: Comparative Psychology.*

Senses:—Heliotropism in *Cypridopsis*; TOWLE (696).—Sense of colour and of intensity of illumination; ABELSDORFF (1).—Reactions of Planarians, with and without eyes, to light; PARKER & BURNETT (535).—Sense of orientation; BONNIER (77), CYON (155).—Space-relations; BONNIER (78).—The peripheral organs of the sense of space; CYON (157 & 158).—Sense of direction in Bats; ROLLINAT & TROUSSERT (616).—Why are the semicircular canals disposed as they are? DELAGE (171).—On the functions of the ear-labyrinth; DREYFUS (181).—Auditory vesicles as equilibrating organs in Pterotracheidæ; LLYN (353).—Organs of light perception in the lower animals (Molluscs); HESSE (332).

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The relation of stimulus to sensation; LLOYD MORGAN (505).—Death among animals—zoo-psychology and zoo-ethic; BALLION (26).—The sentiment of death among animals; COUPIN (144).—Study of animal psychology; HACHET-SOUPLET (296).—Behaviour of unicellular organisms; JENNINGS (365).—Experimentation on emotion; SHERRINGTON (656).—Comparative physiology in relation to comparative psychology; UEKKÜLL (703).

Localisation of psychical processes in the brain; ROLLETT (614).—Psychical qualities of ants; BETHE (64).—The memory of fishes; EDINGER (196).—Do the reactions of the lower animals against injury indicate pain sensations? NORMAN (522), LOEB (522).—Physiological psychology; VIGNOLI (711).—Comparative psychology and sensory physiology; WASMANN



(733).—Animal psychology and comparative neuro-physiology; ZIEGLER (758).

Instinct and Intelligence:—Instinct; THORNDIKE (688A).—Associative processes in animals; THORNDIKE (688B).—Instinct or reason?; G. W. & E. G. PECKHAM (545).—Comparative studies on ants and higher animals; WASMANN (734).—The animal and the human mind; SCHOENICKEN (641).—Materials for comparative psychology; study of the instincts of *Argyro-neta aquatica*; W. WAGNER (724).—The animal mind as a factor in evolution; PURNELL (571).—The cytological basis of instinct and memory; ZIEGLER (759).

## 5. PROTOPLASM AND THE CELL.

### a. *Protoplasm.*

Theory of living matter; GIGLIO-TOS (276).—The proteids of living matter; LOEW (436).—Nature and origin of living matter; TURNER (700).—Illustrations of the Granula-theory; ARNOLD (20 & 21).—On protoplasm in general; E. B. WILSON (745).—The state of 'aggregation' in protoplasm; JENSEN (366 & 367), SCHENCK (631).

### b. *Cell, Structure and Function.*

Revised edition of "The Cell in development and in inheritance"; WILSON, E. B. (745).—Structure of the cell; HEIDENHAIN (314).—Organization of the cell; BALLOWITZ (29).—Cell-studies; NIESSING (519), PROW-AZEK (565).—Role of the ergastoplasm; GARNIER (255).—Structure of the living cell; SJÖRING (660).—"Specificité" and transformation of cells; RETTERER (605).—Evolution of the animal cell; SMITH (661).

Note on the alleged internal apparatus of ganglion and glandular cells; BALLOWITZ (28).—The canaliculi of cytoplasm and the perinuclear space; DONAGGIO (179).—Intracellular canaliculi in ganglion-cells; STUDNÍČKA (678).—Fine structure of epithelial cells; FOÀ (235).—Structure of ciliated cells and hair-cells; FÜRST (246).

Cellular Physiology:—Physiology of ciliary movement; BERGEL (56), KUILE (401).—Ciliated cells and hair-cells; FÜRST (246).—Development of ciliated cells; GURWITSCH (292).—Study of ciliated cells and their analogues; PRENANT (563), STUDNÍČKA (677), VIGNON (714).—Significance of the basilar granules of cilia; VIGNON (712).—Cilia and cuticle; VIGNON (713).—Theory of amoeboid movement; BERNSTEIN (60).—The plastic activity of animal cells; RANVIER (585).—The law of cellular association; BONMARIAGE & PETRUCCI (75).—Cellular struggle; COTRONEI (142).—Physiological degeneration in the Protozoa; R. HERTWIG (330).—Senescence in Infusorians; KULAGIN (400).—Some aspects of cell metabolism illustrated with reference to the pancreas cell; MATHEWS (475).—Absorption of aniline stains by the living cell; OVERTON (529).

### c. *Nucleus, Nucleolus, Centrosome, etc.*

The position and function of the nucleus; GERASSIMOFF (268).—Giant nuclei; BALLOWITZ (27).—Binuclear hepatic cells; ARAPOW (19).—Nuclear metamorphoses during growth and in old age; BALLOWITZ (30).—Formation of the nucleus; VEVEY (709). Nuclear erosion etc. under the influence of the cell-sphere; BALLOWITZ (31).—On the alleged amoeboid movements of the germinal vesicle; GIARDINA (274).—Inanition of the nucleus; LOUKIANOV (449).—Persistence of a nucleus in adult Mammalian red blood corpuscles; MARCHESINI (461).

Nuclei and cell-spheres of the membrana elastica posterior of the eye,—a contribution to our knowledge of cell-organisation; BALLOWITZ (29).—Secretary rôle of the nucleus; PHISALIX (554).—Rôle of the nucleus in absorption; STASSANO (668).—Function of the nucleus in the formation of hæmoglobin and in cellular protection; STASSANO (669).

Morphology and physiology of nuclear division; DOFLEIN (176).—Nuclear multiplication in cross-striped muscle; GODLEWSKI (283).—Nuclear divisions in *Noctiluca*; ISHIKAWA (355).—Nuclear division in Protozoa; CALKINS (111A).—Rôle of the nucleolus in secretion; VIGIER (710).—On nucleoli; REDDINGIUS (588).

Centrosomes, etc.—Nature of the so-called kinetic centres of cells; EISMOND (208).—Idiozom and central corpuscle in ovarian ovum of Mammals; GURWITSCH (293).—Discussion of centrosomes etc.; HEIDENHAIN (314).—Occurrence of central corpuscles in nerve-cells of *Cottus scorpio*; KOLSTER (393).—Central corpuscles in germ-cells and sarcomatous cells; LONDON (448).—Centrosomes in relation to ciliated cells; STUDNÍČKA (677).—Centrosomes and ganglion-cells; STUDNÍČKA (678).

The accessory chromosome in the spider; WALLACE (728).—The intermediate corpuscle and the number of chromosomes in the rabbit; WINIWARTER (748).

#### d. Cell-Division.

On cell-division, report; FLEMMING (234).—Plasma-streamings in cell-division; BÜTSCHLI (106).—Anomalous karyokineses; CHATIN (128).—Contributions to the morphology and physiology of cell-division, based on studies of *Noctiluca*; DOFLEIN (176).—Interpretation of karyokinetic figures; GALLARDO (250 & 251).—Mitoses succeeding processes resembling amitoses; HÆCKER (298).—On so-called amitoses; HIS (338).—Study of indirect cell-division in lymphatic cells; JOLLY (369 & 370).

Multiplication of cells by division; POLJAKOFF (558).—On mitotic pressure; investigations on the cells of the capillaries in Salamander larvæ; REINKE (602).—Plasmic currents in mitosis, a contribution to the mechanics of cell-division; REINKE (603).

### 6. OOGENESIS, SPERMATOGENESIS. MATURATION, FERTILISATION.

#### a. Ovum.

History of the germ-cells; BEARD (52), LWOFF (453).—Embryological classification of ova; ÉTERNOD (214).—Histogenesis of the frog's ovary; BOUIN, M. (85).—The genital primordium in the frog; BOUIN, M. (86).—Expulsion of primordial ova in tadpoles; BOUIN, P. (87).—The Graafian follicle in Mammals; BOUIN, P. & M. (88).—Stages in the development of the corpora lutea; BÜHLER (102), HONORÉ (345).—Nature of the corpus luteum; PALADINO (530 & 531).—Relation of the zona pellucida to the ovum; VON EBNER (194).—Photographs of the egg of *Allolobophora fetida*; FOOT & STROBELL (239).—The vitality of ova; GEMMILL (266).—Oogenesis in the rabbit; WINIWARTER (749).—Polyovular follicles; BOUIN, P. & M. (88), HONORÉ (346), SCHUMACHER & SCHWARZ (649).—Ova with several nuclei; SCHUMACHER & SCHWARZ (649).

On the alleged amœboid movements of the germinal vesicle; GIARDINA (274).—Idiozom and central corpuscle in the ovarian ovum of Mammals; GURWITSCH (293).—Ovarian follicle of Reptiles; LOYEZ (450).—Atrophy of ova in mammalian ovary; MATCHINSKY (471).—Healing of ovarian wounds and regeneration of ovarian tissue; MAXIMOW (482).—The defence of the egg; LOISEL (439).

Oogenesis in *Cerebratulus*; C. B. WILSON (744).—The problem of the sex-cells in Hydromedusæ; HARGITT (307).—The ovum of *Schichostemma*; CHILD (130).—Oocytes of the cat; HOLMGREN (342).—Studies on the mammalian ovary; HONORÉ (345 & 346).—Differentiation of cellular elements in the ovary of the queen-bee (*Apis mellifica*); PAULCKE (538).—Oogenesis in *Rhizotrogus solstitialis*; RABES (578).—Oogenesis etc. in larval *Antedon*; RUSSO (622).—Abnormal ovum of *Tropidonotus natrix*; WETZEL (737).

### b. *Spermatozoon*.

Histogenesis of spermatozoa in *Triton cristatus*; BERTACCHINI (62).—Giant spermatids in *Bombinator igneus*; BROMAN (94 & 96).—Structure and development of spermatozoa in the same; BROMAN (95).—In *Amphiuma*; MCGREGOR (455).—Spermatogenesis of *Hydra*; DOWNING (180).—Division of spermatocytes in Mammals; VON EBNER (195).—Spermatogenesis in *Batrachoseps*; EISEN (206 & 207).—Spermatogenesis of *Peripatus balfouri* up to the formation of the spermatid; MONTGOMERY (500).—In man; WILCOX (740).—In *Cerebratulus lacteus*; C. B. WILSON (744).

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The "Nebenkern" (mitochondrial body) of sperm cells; MEVES (489).—Note on spermatogenesis; NIESSING (520).—Staining spermatozoa; PAPPENHEIM (532).—Amitotic division of Sertoli's cells: fate of the nucleolus, etc.; REGAUD (589).

Normal Degeneration of seminal cells in Mammals; REGAUD (590).—Nuclei of rat's spermatocytes; REGAUD (593).—Abnormalities in mammalian spermatogenesis; REGAUD (591, 598 & 599).—Phases of spermatogenesis; REGAUD (595 & 595A).—Alleged direct division of spermatids in Mammals; REGAUD (592).—Seminal secretions; REGAUD (594, 596 & 597).

Alterations in the seminiferous tube of the white rat in the course of induced alcoholism; BOUIN & GARNIER (89).—The vitality of spermatozoa; GEMMILL (266).—Studies on spermotoxin; METALNIKOFF (487), METSCHNIKOFF (488).

### c. *Maturation*.

The ideas of Driesch regarding polar globules; GIARD (269).—Maturation and fertilisation; POLJAKOFF (559).—In *Limax agrestis*; BYRNES (111).—In *Petromyzon fluviatilis*; HERFORT (320).—In *Moina rectirostris*; LEPECHKINE (420).—In pulmonate Gasteropods; LINVILLE (426).—In *Thysanozoon brocchi*; SCHOCKHAERT (639).—In *Cerebratulus lacteus*; C. B. WILSON (744).

Mitoses of premature maturation in Mammals; BOUIN, P. & M. (88).

### d. *Fertilisation*.

General account of fertilisation; LWOFF (453).—Nature of the process of fertilisation; LOEB (433A).—In *Limax agrestis*; BYRNES (111).—In Batrachians; CARNOY & LEBRUN (120).—In *Tubifex rivulorum*; GATHY

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## II. MAMMALIA.

BY

R. LYDEKKER.

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## INTRODUCTION.

THE number of papers recorded for 1900 somewhat exceeds those enumerated in 1899; that list being in excess of the one for the previous year.

From a systematic and phylogenetic point of view, perhaps the two most important papers of the year are DOLLO's arboreal ancestry of Marsupials and OSBORN's researches on the extinct Rhinoceroses of Europe and North America. The last-named writer has also devoted a special contribution to the origin of Mammals, as deduced from the occipital condyles; and KINGSLEY contributes to the same subject from the standpoint of the auditory ossicles.

Much attention continues to be devoted to the Marsupials and Monotremes, HILL furnishing another contribution to the study of the generative organs of the former, while EGGEING treats of the dermal glands, and EMERY of the carpus and tarsus of the latter. The comparatively fresh subject of the arrangement of the papillary ridges on the palm and sole of the Primates has received attention from FÉRE, and also from the Recorder.

Among anatomical papers, special mention may be made of KLAATSCH's researches on the femoral muscles, of TANDLER's investigations of the cephalic arteries, and of LÖNNBERG's dissection of the Musk-Ox. PAULLI continues his researches on the pneumaticity of the skull; and STEHLIN has brought to a close his important investigations on the dentition and distribution of the Pigs.

W. L. SCLATER's work on the Mammals of South Africa is a valuable contribution to the faunistic history of that continent; while OSBORN's theory as to the origin of that fauna opens up new, not to say revolutionary, ideas.

MESSRS SCLATER and THOMAS have brought to a conclusion the "Book of Antelopes," and many papers have been contributed, for the most part by well-known names, to the never-ending work of species-making. It is notable in this connection that American writers are devoting more and more of their attention to the Mammals of the Old World.

Palæontology has been singularly barren during the year, so far as Mammals are concerned, nothing of any special interest having been described.

## I. TITLES.\*

1. ALLEN, J. A. The North American Jumping Mice. Amer. Natural. xxxiv, pp. 199-202. [*Dipodidae*.]
2. —. Descriptions of new American Marsupials. Bull. Amer. Mus. xiii, pp. 191-199. [*Marsupialia*.]
3. —. On Mammals collected in South-eastern Peru by Mr H. H. Keays, with descriptions of new species. T. c. pp. 219-227. [*Rodentia*.]
4. —. The systematic name of the Cuban Red Bat. P. Washington Soc. xiii, p. 165. [*Chiroptera*.]
5. —. The proper name of the Viscacha. T. c. pp. 183 & 184. [*Octodontidæ*.]

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

6. ALMERA, J. Sobre las especies *Acerotherium lemanense*, *Mastodon longirostris*, y un *Elephas* descubiertos en esta provincia de Barcelona. Bol. Ac. Barcelona (3) i, pp. 535-537. [*Proboscidea*.]
7. AMEGHINO, F. Mamíferos del cretáceo inferior de Patagonia (Formación de las areniscas abigarradas). Comun. Mus. Buenos Aires i, pp. 197-206, figg. [*Ungulata*, *Marsupialia*.]
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[+ prefixed to a paragraph indicates that it relates in part, or altogether, to extinct forms: when this sign is placed before a specific name it indicates that the species referred to is an extinct one.]

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*Microgale brevicauda*, Madagascar, GRANDIDIER, Bull. Mus. Paris 1899, p. 349, n. sp.

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*Vulpes harrimani*, Kadiak Id, p. 14, *hallensis*, Hall. Id, p. 15, *necator*, California, p. 664, *cascadensis*, Cascade Range, p. 665, *rubricosa bangsi*, Labrador, p. 667, *alascensis*, Alaska, p. 668, *alascensis*

*abietorum*, B. Columbia, p. 669, *regalis*, Minnesota, p. 672, MERRIAM, P. Washington Ac. ii : n. spp. & subsp.

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*Galictis barbara senex*, Vera Cruz, *b. biologie*, Panama, p. 146, *b. trinitatis*, Trinidad, p. 148, THOMAS, Ann. Nat. Hist. (7) v, n. subsp.

*Conepatus zorilla*, v, p. 217, *arequipæ*, vi, p. 467, Peru, THOMAS, op. cit. n. spp.

*Lutreola vison ingens*, Alaska, OSGOOD, North Amer. Fauna No. 19, p. 42, n. subsp.

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*Otaria velutina*, p. 14, *fulva*, p. 17, *rufa*, p. 28, *argentata*, p. 38, *brachydactyla*, p. 43, *leucostoma*, p. 46, S. America, PHILIPPI, An. Mus. Chile 1892 (vide supra, p. 14, No. 233), n. spp.

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- Sciurus maccllellandi manipurensis*, Manipur, *m. maritimus*, Fokien, p. 51, *m. monticolus*, Fokien, *m. formosanus*, Formosa, p. 52, BONHOTE, Ann. Nat. Hist. (7) v; *stramineus guayanus*, Ecuador, v, p. 150, *cocalis*, Amazonia, vi, p. 138, *simonsi*, Ecuador, p. 294, *peruanus napi*, Rio Napo, p. 295, *versicolor*, Ecuador, p. 385, THOMAS, t. c.; *notatus miniatus*, p. 79, *tenuis surdus*, p. 80, Siam, *mimellus*, p. 218, *abbotti*, p. 224, *klassi*, p. 225, Tambelan Ids, *mimicolus*, p. 219, St Barbe Id, *tenuirostris*, p. 221, Tioman Id, *anambensis*, p. 223, Anambas Ids, *rufobrachiatu libericus*, Liberia, p. 633, MILLER, P. Washington Ac. ii; *variabilis morulus*, BANGS, P. New England Zool. Club ii, p. 43; *hudsonicus petulans*, Alaska, OSGOOD, North Amer. Fauna, No. 19, p. 27; n. spp. & subspp.; *ludovicianus neglectus* (Gray, 1867) stands for *l. vicinus*, BANGS, 1896, NELSON, P. Soc. Washington xiii, p. 170.
- Funambulus castaneus*, Anambas Ids, MILLER, P. Washington Ac. ii, p. 217, n. sp.
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- Eutamias caniceps*, Alaska, OSGOOD, North Amer. Fauna, No. 19, p. 28, n. sp.
- Spermophilus osgoodi*, p. 18, *barrowensis*, p. 19, *beringensis*, p. 20, MERRIAM, P. Washington Ac. xi; *empetra plesius*, OSGOOD, North Amer. Fauna, No. 19, p. 29 : n. spp. & subsp., Alaska.
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- Myoxus glis*, notes on, BÄCHLER, Ber. St. Gall. Ges. 1898-99, p. 267, HEMPEL, Ber. Ges. Chemnitz xxiv, p. 98.
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- Dendromys lorati*, Abyssinia, DE WINTON, P. Zool. Soc. London 1900, p. 82, pl. x, n. sp.

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*Mesocricetus kænigi*, Caucasus, NEHRING, t. c. p. 301, n. sp.

*Hesperomys glirinus* and *lanatus*, No. 13 (1896), p. 19, *puerulus*, p. 20, *dolichonyx*, p. 21, *d. cinnamomea*, p. 22, Tarapaca, *ethiops*\*, Santiago, No. 14 (1900), p. 9, *capito*, Atacama, p. 10, *dumetorum*, Valdivia, *dichrous*, Santiago, p. 14, *megalotis*, Santiago, p. 15, *lepturus*, Santiago, *psilurus*, Colchagua, p. 17, *trichotis*, Santiago, p. 18, *exiguus*, Santiago, p. 19, *foncki*, Llanquihue, p. 20, *mollis*, Santiago, p. 23, *chonticus*, Chonos Id, *vincalis*, Santiago, p. 24, *commutatus*, Valdivia, p. 25, *landbecki*, Illapel, p. 26, *senilis*, Santiago, p. 27, *illapelinus*, p. 28, Illapel, *simpsoni*, Patagonia, p. 29, *macrocerus*, Colchagua, *segethi*, Santiago, p. 30, *nigribarbis*, Talcaregue, p. 31, *germaini*, Santiago, *saltator*, Santiago, p. 32, *amblyrhynchus*, Valdivia, p. 36, *brachytarsus*, Santiago, p. 37, *nasica*, S. America, *campestris*, Choapa, p. 38, *melanizon*, Chili, *melanotis*, S. America, p. 39, *ruficaudus*, Chili, *macronychos*, Chili, p. 40, *infans*, Chili, *xanthopus*, Osorno, p. 41, *mocha*, Mocha Id, *pachycephalus*, St. of Magellan, p. 42, *diminutivus*, Illapel, p. 43, *agilis*, Illapel, p. 44, *subrufus*, Chili, *fusco-ater*, S. America, p. 45, *pencanus*, Concepcion, *araucanus*, Concepcion, p. 46, *platytarsus*, La Ligua, *pernix*, La Ligua, *leptodactylus*, Valparaiso, p. 48, *nemoralis*, Valdivia, *melampus*, Cartagena, p. 49, *saltuum*, Andes, p. 50, *glaphyrus*, Maule, *longibarbus*, Valdivia, p. 51, *coquimbensis*, Coquimbo, p. 52, *cyaneus*, Constitucion, p. 53, *griseo-flavus*, Coquimbo, p. 55, *peteroanus*, Peteroa, *osorninus*, Osorno, p. 56, *microtis*, Maule, *atratus*, Maule, p. 57, *dasyppus*, S. America, *cauquenensis*, Maule, p. 61, *melaenus*, Maule, PHILIPPI, An. Mus. Chile : n. spp.

*Rhipidomys venustus*, Merida, p. 152, *goodfellowi*, p. 270, Rio Napo, *venezuela cumananus*, Cumana, *dryas*, Paramba, p. 271, THOMAS,

\* This and the following are described as *Mus*.



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- Oligoryzomys*, n. subg. for *Oryzomys navus*, BANGS, P. New England Zool. Club i, p. 94.
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- Oryzomys sylvaticus*, p. 272, *balneator*, p. 273, Ecuador, *prætor*, p. 354, Peru, THOMAS, t. c.; *keaysi* and *obtusirostris*, Peru, ALLEN, Bull. Amer. Mus. xiii, p. 226.
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- Eligmodontia sorella*, Peru, THOMAS, Ann. Nat. Hist. (7) vi, p. 297, n. sp.
- Rhithrodon longicaudatus*, E. Patagonia, PHILIPPI, An. Mus. Chile, No. 14, p. 64, n. sp.
- Phyllotis gerbillus*, Peru, v, p. 151, *venustus*, Merida, p. 152, *amicus*, p. 355, *a. maritimus*, vi, p. 296, *a. montanus*, p. 297, *sublimis*, p. 467, Peru, THOMAS, Ann. Nat. Hist. (7) : n. spp. & subsp.
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- Fiber spatulatus*, Alaska, OSGOOD, t. c. p. 36, n. sp.
- Phenacomys celatus crassus*, Labrador, BANGS, P. New England Zool. Club ii, p. 39, n. subsp.
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- Evotomys orca*, Alaska, MERRIAM, p. 16, *norvegicus*, Norway, MILLER, p. 93, *vasconia*, Pyrenees, p. 96, *hercynicus helveticus*, Alps, p. 98, *h. suecicus*, Sweden, p. 101, *h. rubidus*, France, p. 102, *h. britannicus*, Britain, p. 103, P. Washington Ac. ii : n. spp. & subsp.
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# III. AVES.

BY

R. BOWDLER SHARPE, LL.D., &C.

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## INTRODUCTION.

PERHAPS the principal feature of the year 1900 as regards Ornithology is the marked increase in the number of new species described from Africa, but there are no works or Memoirs worthy of special notice beyond their fellows. In fact 1900 may be reckoned an ordinary year of steady progress, in which some very good work has been done. The writer has again to acknowledge the assistance he has received from Mr Charles Chubb in the compilation of this Record.

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*Carpophaga griseicapilla*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 501.  
*Turacena menadensis sulaensis*, n. subsp., Sula Islands; FORBES & ROBINSON, Bull. Liverp. Mus. ii, p. 135: *T. iriditorques*, figured; iid. t. c. pls. ii & iii.  
*Macropygia minor* Swinh. is a distinct species; GRANT, P. Zool. Soc. London 1900, p. 502.  
*Reinwardtana*, review of the genus: *R. reinwardti albida*, n. subsp., Buru; HARTERT, Nov. Zool. vii, pp. 240 & 241.  
*Turtur turtur arenicola*, breeding in Tunis; ERLANGER, J. Ornith. 1900, p. 100.  
*Homopelia chuni*, n. sp., Chagos Is. (Diego Garcia); REICHENOW, Ornith. Monber. viii, p. 140.  
*Phlogoenas keayi*, n. sp., Negros; CLARKE, Ibis 1900, pp. 359 & 360, pl. viii.

## Order RALLIFORMES.

- Canirallus batesi*, n. sp., French Congo; SHARPE, Bull. B. O. C. x, p. lvi.  
*Orex pratensis*, note on the moult and colour changes; BONHOTE, Zoologist 1900, pp. 29-31.  
*Porzana jamaicensis*, life history; ALLEN, Auk xvii, pp. 1-8, pl. i: STONE, t. c. pp. 171 & 172.  
*Pennula sandwichensis* and *P. millsii*, figured; ROTHSCILD, Avif. Layson, Part III, pl. lxxvi.  
*Notornis mantelli*, note on its origin and extinction; HENRY, Tr. N. Zealand Inst. xxii, pp. 53 & 54.

## Order COLYMBIFORMES.

See FORBES (163).

- Gavia* Forster (nec Gm., *apud auct. amer.*) = *Urinator* Cuv.; REICHENOW, Ornith. Monber. viii, pp. 135 & 136.  
*G. arctica*, in Colorado; AIKEN, Auk xvii, p. 298.

## Order SPHENISCIFORMES.

See OUSTALET (363A).

- Notes on various species; RACOVITZA, Bull. Soc. Belge Geol. 1900, pp. 21-26, figg. 1-6.  
*Eudypetes chrysocome*, plumages of the young described; HALL, Ibis 1900, pp. 32 & 33.

## Order PROCELLARIIFORMES.

- Notes on various species; RACOVITZA, Bull. Soc. Belge Geol. 1900, pp. 17-19.  
*Ocanites oceanicus*, notes on the nesting habits; HALL, Ibis 1900, pp. 19-21.  
*Puffinus cuneatus* and allies, nesting habits; ANTHONY, Auk xvii, pp. 247-252, pl. viii.  
*P. bulleri*, off the Californian Coast; LOOMIS, P. Calif. Ac. ii, p. 319.  
*P. gravis*, in Scottish waters; NEWTON, Ann. Scott. Nat. Hist. 1900, pp. 142-147.  
*P. kuhli*, in the Färöen Islands; HAASE, Ornith. Monber. viii, p. 43.

- P. yelkouanus*, near Bridlington, Yorks.; SHARPE, Bull. B. O. C. x, p. xlviii: at Scarborough; CLARKE, Zoologist 1900, p. 521.  
*P. newelli*, n. sp., Hawaiian Isl.; HENSHAW, Auk xvii, pp. 246 & 247.  
*Œstrelata lessoni*, nestling described; HALL, Ibis 1900, pp. 23 & 24.  
*Œ. fea*, notes on; SALVADORI, Ibis 1900, pp. 302 & 303: *Œ. mollis*, full synonymy given and young described; id. t. c. pp. 300-302.  
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*Ossifraga gigantea*, notes on; HALL, Ibis 1900, pp. 25-28, fig. 2.  
*Prion desolatus*, nesting habits; id. t. c. pp. 29 & 30.  
*Diomedea chionopectera* and *D. melanophrys*, notes on; id. t. c. pp. 12-18, fig. 1.  
*D. melanophrys*, near the Faroe Islands; HARVIE-BROWN, Zoologist 1900, p. 324.  
*D. chinensis*, in Hawaii; HENSHAW, Auk xvii, p. 202.  
*D. platei*, head figured; REICHENOW, J. Ornith. 1900, p. 245.

## Order ALCIFORMES.

- Mergulus alle*, on the Solway Firth; MACPHERSON, Ann. Scott. Nat. Hist. 1900, p. 123.  
*Micruria*, notes on the genus; ANTHONY, Auk xvii, pp. 168 & 169.

## Order LARIFORMES.

- Gavia* Gm. = *Larus* Linn. and *Gavia* Forster (nec Gm.) = *Urinator* Cuv.; REICHENOW, Ornith. Monber. viii, pp. 135 & 136.  
 Ueber die Fusshaltung fliegender Möven; ROTH, Ornith. Monber. viii p. 156.  
*Sterna*, nesting of species on the Farquhar Islands; FARQUHAR, Ibis 1900, pp. 63-67.  
*S. virgata*, nesting habits; HALL, Ibis 1900, pp. 11 & 12.  
*S. caspia*, on the coast of East Pomerania; BALLOWITZ, J. Ornith. 1900, pp. 165-175.  
*Anous stolidus pileatus* (Scop.), from Ruk Isl.; HARTERT, Nov. Zool. vii, pp. 9 & 10.  
*Rhynchops flavirostris*, eggs described; ALEXANDER, Ibis 1900, p. 442.  
*Larus minutus*, breeding in Prov. Riazan, Russia; NEWNHAM, Bull. B. O. C. x, p. 31.  
*L. franklinii*, account of the nesting habits; ROBERTS, Auk xvii, pp. 272-283, pls. ix-xi.  
*L. ridibundus*, note on; CLARK, Essex Natural. xi, pp. 184-190.  
*L. dominicanus*, note on; HALL, Ibis 1900, pp. 10 & 11.  
*L. argentatus*, note on; KNIGHT, Auk xvii, pp. 63 & 64, 169.  
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*S. parasiticus*, in Shetland; SAXBY, Zoologist 1900, p. 281.

## Order CHARADRIIFORMES.

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*Xiphidiopterus albiceps*, in Uhehe, E. Africa; REICHENOW, Ornith. Monber. viii, p. 4.  
*Vanellus cristatus*, distribution in France in 1885 and 1886; TERNIER, Ornith. x, pp. 77-96.  
*Chetusia gregaria*, in Hungary; MADARÁSZ, Ornith. Monber. viii, p. 170.



- Charadrius plumialis* × *C. fulvus*, from the Yenesei Valley; POPHAM, Bull. B. O. C. xi, p. 41.
- C. plumialis*, migration and distribution in France in 1885 and 1886; TERNIER, Ornith. x, pp. 97–118.
- C. dominicus* and *C. squatarola*, notes on the plumage; DWIGHT, Auk xvii, pp. 383–385.
- C. pallidus*, notes on nesting; ALEXANDER, Ibis 1900, pp. 452–454.
- C. rufocinctus*, n. sp., Great Fish Bay, S.W. Africa; REICHENOW, Ornith. Monber. viii, p. 123.
- Himantopus knudseni*, figured; ROTHSCCHILD, Avif. Laysan, Part III, pl. lxvii.
- Numenius arquata*, breeding in Surrey; BIDWELL, Bull. B. O. C. xi, p. 34; SAUNDERS, l. c.: abnormal growth on the bill; SHUFELDT, Ornith. x, pp. 477–479.
- Limosa lapponica*, breeding in Russian Lapland; WITHERBY, Bull. B. O. C. x, p. xliv: nesting in the Kola Peninsula; id. Ibis 1900, p. 489.
- Micropalama himantopus*, in Colombia; ALLEN, Auk xvii, p. 364.
- Totanus totanus eurhinus*, n. subsp., Lake Tsomoriri, Ladak, Central Asia; OBERHOLSER, P. U. S. Mus. xxii, pp. 207 & 208.
- T. flavipes*, in Colombia; ALLEN, Auk xvii, p. 364.
- Actitis macularia*, notes on the plumages; DWIGHT, Auk xvii, pp. 375–379.
- Machetes pugnax*, distribution in Ireland; PATTEN, Irish Natural. ix, pp. 187–209, 272 & 273, pl. 6.
- Bartramia longicauda*, in Colombia; ALLEN, Auk xvii, p. 364.
- Ereunetes pusillus*, in Colombia; id. t. c. p. 364.
- Tryngites subruficollis*, in Colombia; id. t. c. p. 364.
- Calidris arenaria*, notes on the plumages; DWIGHT, Auk xvii, p. 379–381.
- Heteropygia maculata*, in Co. Mayo, Ireland; SAUNDERS, Bull. B. O. C. xi, p. 34.
- H. bairdi*, in Rye Harbour, Sussex; E. HARTERT, Bull. B. O. C. xi, p. 27.
- Tringa maculata* and *T. minutilla*, in Colombia; ALLEN, Auk xvii, p. 364.
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- Glareola pratincta*, near Montrose; HARVIE-BROWN, Ann. Scott. Nat. Hist. 1900, p. 51.
- G. melanoptera*, in Italy; ARRIGONI, Ibis 1900, pp. 60–62.
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- Lissotis lovati*, n. sp., Abyssinia; GRANT, Bull. B. O. C. x, p. xxxix.

## Order GRUIFORMES.

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- G. tilfordi* identical with *G. grus*; HEINROTH, J. Ornith. 1900, p. 247.
- G. japonensis*, longevity of life; OUSTALET, Ornith. x, p. 62.
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pl. xi, figg. 1-6 in text: notes on the nestling; id. Verh. Ges. Basel xii, pp. 412-429 cum fig.

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*Theristicus*, a review of the genus with full synonymy of and key to the species; SALVADORI, Ibis 1900, pp. 501-517: *T. colombianus* Finsch = *T. caudatus*, imm.: id. t. c. p. 504: *T. branickii* Berl. & Stolz., distinct from *T. melanopsis*, adult and young figured; id. t. c. p. 515, pls. ix & x.

*Ajaja rosea*, note on and bill figured; ALBERT, Revist. chilena iv, p. 7, pl. i.

*Ciconia alba*, distribution and migrations in France in 1885 and 1886; TERNIER, Orn. x, pp. 213-227.

*Anastomus lamelligerus*, below Khartoum; C. ROTHSCILD, Bull. B. O. C. x, p. c.

*Ephippiorhynchus senegalensis*, longevity; OUSTALET, Orn. x, p. 62.

*Ardea cinerea*, see WYATT (756).

*Ardea sumatrana*, in Negros Is., Philippines; CLARKE, Ibis 1900, p. 357.

*A. egretta*, in Colorado; AIKEN, Auk xvii, p. 298.

*A. cærulea*, in Labrador; BANGS, Auk xvii, p. 386.

*Nycticorax griseus*, breeding in Silesia; KOLLIBAY, J. Ornith. 1900, pp. 152-155: *N. nycticorax*, notes on the species in California; COHEN, Condor ii, pp. 10-12.

*N. magnifica*, figured; GRANT, P. Zool. Soc. London 1900, pl. xxxiii.

*Butorides virescens*, in U. S. Colombia; ALLEN, Auk xvii, p. 564.

*B. albolimbatus*, n. sp., Chagos Isl. (Diego Garcia); REICHENOW, Ornith. Monber. viii, pp. 140 & 141.

*Ardeola idæ*, note on and figured; MARTORELLI, Atti Soc. Ital. xxxix, pp. 349-356, pl. vii.

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## Order PHENICOPTERIFORMES.

*Phænicopterus roseus*, notes on the nesting; GOUBIE, Orn. x, pp. 229-234.

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*Cygnus immutabilis*, notes on; HEINROTH, J. Ornith. 1900, p. 247: REICHENOW, J. Ornith. p. 248.

*Chen rossii*, colour of the soft parts; BLAAUW, Ibis 1900, pp. 399 & 400.

*C. nivalis*, in Ireland; USSHER, Irish Natural. ix, p. 109.

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*A. albifrons*, in Shetland; BUCKLEY, Ann. Scott. Nat. Hist. 1900, p. 50.

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Ducks and Duck-breeding; BROWN, J. Board Agric. London vii, pp. 300-310.

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*A. wyvilliana*, male, female, and young, figured; ROTHSCHILD, Avif. Laysan Part III, pls. lxxviii & lxxix.  
*Dafila eatoni*, notes on; HALL, Ibis 1900, pp. 4-6.  
*Querquedula circia*, breeding in Kent; TICEHURST, Zoologist 1900, p. 279.  
*Q. discors*, in Friesland; SNOUCKAERT VAN SCHAUBERG, Ornith. Monber. viii, pp. 17 & 18.  
*Spatula clypeata*, breeding in Kent; TICEHURST, Zoologist 1900, p. 279.  
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*Mergus albellus*, notes on; id. t. c. pp. 200-206: in Shetland; BUCKLEY, Ann. Scott. Nat. Hist. 1900, p. 50.  
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*M. serrator*, in Hawaii; HENSHAW, Auk xvii, p. 203: figured; BAKER, J. Bombay Soc. xiii, pl. x, pp. 217-222: *M. castor*, notes on; id. t. c. pp. 207-217.

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- Phalacrocorax lucidus*, in Northern Rhodesia; SCLATER, P. Zool. Soc. London 1900, p. 3.  
*P. glaucus* = *P. chalconotus*; ROTHSCHILD, Bull. B. O. C. x, p. liii.  
*P. verrucosus*, nesting habits; HALL, Ibis, 1900, pp. 2-4.  
*Sula*, nesting of species on the Farquhar Islands; FARQUHAR, Ibis 1900, pp. 63-67.  
*S. bassana*, still breeds on Lundy Island; BLATHWAYT, Zoologist 1900, pp. 376 & 377.  
*S. abbotti*, in Christmas Island; R. B. SHARPE, Monogr. Christmas Isl. p. 44.  
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*Phaethon rubricauda erubescens*, n. subsp., Kermadec, Norfolk, Lord Howe's Islands; ROTHSCHILD, Avif. Laysan, Part III, p. 296.  
*P. fulvus*, figured; SHARPE, Monogr. Christmas Isl. p. 45, pl. iii.

## Order ACCIPITRIFORMES.

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*Accipitriformes*, classification of; id. t. c. pp. 269-277, 522-528.  
*Circus pygargus*, in Co. Wicklow in September; WILLIAMS, Irish Natural. ix, p. 21.  
*Urotriorchis macrourus*, in the Cameroons, REICHENOW, J. Ornith. 1900, p. 270.  
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*A. natalis*, figured; R. B. SHARPE, Monogr. Christmas Isl. p. 46, pl. v.

- Lophospiza trivirgata*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 489.
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- A. affinis*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 490.
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- Morphnus guianensis*, figured; SALVIN & GODMAN, Biol. Centr.-Amer. Aves iii, Part CLX, pl. 63.
- Thalassaeetus macrurus*, n. sp., Yakutsk, E. Siberia; MENZBIER, Bull. B. O. C. xi, p. 4.
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- Milvus iclinus*, an old record in Fifeshire; HARVIE-BROWN, Ann. Scott. Nat. Hist. 1900, p. 49: *M. regalis*, in Kent; GREEN, Knowledge xxiii, No. 173, p. 61.
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- Falco regulus* must stand for the Merlin, *F. merillus* Gerini is untenable; OBERHOLSER, Auk xvii, p. 173.
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- Tinnunculus naumanni*, in South Bohemia; JANDA, Ornith. Jahrb. xi, pp. 189-195: TALSKEY, t. c. xi, pp. 235 & 236.

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- Morphology of the cranium in the Owls; SHUFELDT, J. Morphol. xvii, pp. 119-176, pls. xvii-xx.
- Asio otus*, in Barra; MAGILLIVRAY, Ann. Scott. Nat. Hist. 1900, p. 121: in Islay; SKIRVING, t. c. p. 184: GILMOUR, t. c. p. 49.



- Bubo ascalaphus*, eggs from the Dahshur Pyramid, Egypt; W. ROTHSCCHILD, Bull. B. O. C. xi, p. 10: *B. mackinderi*, figured; SHARPE, P. Zool. Soc. London 1900, pl. xliii.
- Pulsatrix fusciventris*, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 368, pp. 32 & 33.
- Pisorhina* Kaup. vice *Scops* Brünn. (nec Briss.); REICHENOW, Ornith. Monber. viii, p. 68: *P. magica* and its allies; HARTERT, Nov. Zool. vii, pp. 227 & 228.
- Scops giu*, in Shetland; CLARKE, Ann. Scott. Nat. Hist. 1900, p. 184: *S. latouchi*, n. sp., Fohkien, China; RICKETT, Bull. B. O. C. x, p. lvi.
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- Megascops flammeolus* and *M. flammeolus idahoensis*, life history and distribution; OBERHOLSER, Ornith. x, pp. 23-38.
- Athene chiaradiae*, n. sp., Udine, Italy; GIGLIOLI, Avicula iv, pp. 57-60.
- Ninox natalis*, figured; R. B. SHARPE, Monogr. Christmas Isl. p. 47, pl. iv.
- Syrnium nebulosum*, breeding in Colorado; AIKEN, Auk xvii, p. 298.
- Gisella jheringi* is from Rio Grande do Sul; JHERING, Ibis 1900, p. 217.
- Carine noctua*, in Flintshire; FORREST, Zoologist 1900, p. 482: note on; MEADE-WALDO, t. c. p. 556: in North Wales; DOBIE, t. c. p. 556.
- Speotyto cunicularia cavicola*, nomen emend. pro *S. bahamensis* Maynard nec Cory; BANGS, Auk xvii, p. 287.
- Glaucidium sylvaticum*, figured; BÜTTIKOFER, Notes Leyden Mus. xxi, pl. 13: *G. borneense* Sharpe = *G. sylvaticum*; id. t. c. p. 155: *G. whitelyi*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 488.
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- Eos kuehni* = *E. rubra* juv.; W. ROTHSCCHILD in Sharpe's Handl. B. ii, p. 2: *E. bornea* and *E. cyanonotus*, notes on; HARTERT, Nov. Zool. vii, pp. 228 & 229.
- Trichoglossus novae-hollandiae septentrionalis*, n. subsp., North Queensland; ROBINSON, Bull. Liverp. Mus. ii, p. 115: eggs described; LE SOUËF, Victorian Natural. xvii, p. 146.
- Charmosynopsis bella*, n. sp., Wharton Range, New Guinea; DE VIS, Ann. Queensland Mus. No. 5, pp. 12 & 13, pl. viii.
- Oreopsittacus frontalis*, n. sp., Aroa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 186.
- Cacatua galerita triton* and allies, note on; ROBINSON & LAVEROCK, Ibis 1900, pp. 642-644.
- Nasiterna bruijini*, from Ambernoh River, Dutch New Guinea; ROTHSCCHILD, Bull. B. O. C. x, p. ci.
- Pyrrhura griseipectus*, n. sp., Hab. ?; SALVADORI, Ibis 1900, pp. 672 & 673: *P. hypoxantha*, described and figured; id. t. c. pl. xiv: *P. chiripepe* (Vieill.) is distinct from *P. vittata* (Shaw); id. t. c. pp. 668-671: a key to the species; id. t. c. pp. 673 & 674.
- Protogeris virescens*, breeding habits; W. A. SCHULZ, Ornith. Monber. viii, pp. 56 & 57.
- Amazona oratrix tresmariae*, n. subsp., Tres Marias Isl.; NELSON, Auk xvii, p. 256.

*Pæocephalus meyeri erythraea* and *P. meyeri transvaalensis* O. Neumann, are not distinct from *P. meyeri*; ALEXANDER, Ibis 1900, pp. 429 & 430.

*Prioniturus mada*, n. sp., Buru; HARTERT, Nov. Zool. vii, p. 230.

*Palæornis salvadorii* Oust. is distinct from *P. derbyanus* Fraser; GRANT, Ibis 1900, p. 600.

*Agapornis lilianæ*, note on; ALEXANDER, Ibis 1900, pp. 431 & 432.

*Platycercus macgillivrayi*, n. sp., North Queensland; NORTH, Victorian Natural. xvii, pp. 91-93, 113 & 114: *P. icterotis*, eggs described; LE SOUËF, Ibis 1900, p. 460.

## Order CORACIIFORMES.

### Sub-order PODARGI.

*Batrachostomus*, sp. inc. Negros, Philippines; CLARKE, Ibis 1900, pp. 355 & 356. [*B. menagei* ♀.]

### Sub-order CORACIÆ.

*Atelornis squamigera* is the type of the genus *Atelornis*; L. STEJNEGER in Sharpe's Handl. B. ii, p. 45.

*Uratelornis chimæra*, note on; OUSTALET, Bull. Mus. Paris 1899, no. 6, pp. 280-282.

*Eurystomus calonyx* is a summer visitor to Kuatun [not *E. orientalis* as stated Ibis 1892, p. 478]; LA TOUCHE, Ibis 1900, p. 44.

### Sub-order HALCYONES.

*Ceryle lugubris continentalis*, n. subsp., Himalayas; HARTERT, Nov. Zool. vii, p. 534.

*Alcedo euryzona*, at Pankalan Ampat, Sarawak; SHELFORD, J. Straits Asiat. Soc. No. 33, p. 18: *A. grandis*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 487.

*Ceyx tridactyla*, in Hainan; id. t. c. p. 487.

*Syma weiskei*, n. sp., Astrolabe Mts. S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 186.

*Dacelo gigas minor*, n. subsp., North Queensland; ROBINSON, Bull. Liverp. Mus. ii, p. 116 = *D. gigas*; ROBINSON & LAVEROCK, Ibis 1900, p. 638: *D. gaudichaudi*, nest and eggs described; LE SOUËF, Ibis 1900, pp. 616 & 617.

*Halcyon farquhari*, figured; SHARPE, Ibis 1900, pl. vii: *H. semicærulea hyacinthina*, n. subsp., E. Africa; REICHENOW, J. Ornith. 1900, p. 249: *H. australasica dammeriana*, n. subsp., Dammer Isl.; HARTERT, Nov. Zool. vii, p. 19: *H. sancta*, figured: SETH-SMITH, Avicult. Mag. vi, pl. i.

### Sub-order BUCEROTES.

*Buceros (Pholidophalus) kethullei*, n. sp., Congo Free State; DUBOIS, Ornith. Monber. viii, p. 69: *B. sharpii*, in North Angola; FERREIRA, J. Lisb. (2) vi, No. xxi, p. 54.

*Lophoceros erythrorhynchus*, note on; ALEXANDER, Ibis 1900, pp. 101 & 102.

## Sub-order UPUPÆ.

- Upupa epops pallida*, n. subsp., Tunis; ERLANGER, J. Ornith. 1900, pp. 15-17.  
*Rhinopomastus schalowi*, n. sp., Equatorial Africa; NEUMANN, t. c. pp. 221 & 222: *R. cabanisi*, figured; DUBOIS, Synopsis Avium, pl. iii, fig. 1.

## Sub-order MEROPES.

See DUBOIS (138).

- Melittophagus sharpei*, n. sp. [*M. cyanostictus*, auct. nec Cab.]; HARTERT, Nov. Zool. vii, p. 35: is true *M. cyanostictus* Cab., *M. pusillus ocularis*, n. subsp., N.E. Africa; REICHENOW, Ornith. Monber. viii, p. 87.  
*Merops batesiana*, n. sp., French Congo, *M. northcotti*, n. sp., Gold Coast; SHARPE, Bull. B. O. C. x, pp. xlviii & xlix: *M. natalensis*, note on; ALEXANDER, Ibis 1900, pp. 97-99: *M. boehmei*, in the Zambesi region; id. t. c. p. 97.  
*Nyctiornis athertoni*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 486.

## Sub-order MOMOTI.

- Momotus lessoni goldmani*, n. subsp., Mexico; NELSON, Auk xvii, pp. 256 & 257.

## Sub-order CAPRIMULGI.

See DUBOIS (138).

- On the palate of certain forms of *Caprimulgidae*; PYCRAFT, Bull. B. O. C. xi, pp. 12 & 13.  
*Nyctibius jamaicensis mexicanus*, n. subsp., Mexico; NELSON, Auk xvii, p. 260.  
*Macropsalis forcipata* Burm. = *M. creagra* (Bp.); E. HARTERT in Sharpe's Handl. B. ii, p. 81.  
*Antrostomus oaxaca*, n. sp., Mexico; NELSON, Auk xvii, pp. 260 & 261: *A. chiapensis*, n. sp., Mexico; id. t. c. p. 261.  
*Caprimulgus fülleborni*, n. sp., New Heligoland, W. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 98: *C. eximius*, near Khartoum; H. F. WITHERBY, Bull. B. O. C. x, p. cv: *C. griseatus*, female described; CLARKE, Ibis 1900, pp. 353 & 354: *C. stellatus*, figured; GRANT, Ibis 1900, pl. iv: *C. frænatus* and *C. rufigena* belong to the group which have a red collar; SHARPE, Ibis 1900, p. 499.

## Sub-order CYPSELI.

See DUBOIS (138).

- Chaetura thomensis*, n. sp., St Thomé Isl. W. Africa; HARTERT, Bull. B. O. C. x, p. liv: *C. caudacuta*, breeding near Nerochinski; H. NOBLE, Bull. B. O. C. x, p. xlvii: *C. pelasgia*, its nesting; SCOTT, Bull. B. O. C. x, p. liv: *C. stictolema*, from the Zambesi region; ALEXANDER, Ibis 1900, p. 93.  
*Cypselus* v. *Apus* for the typical Swifts; SHARPE, Handl. B. ii, pp. v, 95: *C. alfredi*, n. sp., Mbara, Nyasaland; SHELLEY, B. Africa, ii, Part II, p. 345: *C. melba*, anatomy of; BURI, Jena. Zeitschr. xxxiii, pp. 361-610, pls. xvii-xxii: *C. apus*, nesting habits; STEELE-ELLIOTT, Zoologist 1900, pp. 479-481: *C. brunneitorques griseifrons*, n. subsp., Mexico; NELSON, Auk xvii, p. 262.

## Sub-order TROCHILI.

See DUBOIS (138).

*Trochilide*; HARTERT, Das Tierreich, Lief. 9, pp. x, 254.

The Rufous Humming-birds of Cape Disappointment; KOBBE, Auk xvii, pp. 8-15.

*Doryfera* Gould vice *Hemistephania* Reichenb.; HARTERT, J. Ornith. 1900, p. 358.

*Phaethornis berlepschi* Hartert = *P. syrmatophorus* Gould; id. t. c. p. 359.

*Eutoxeres baroni* Hartert = *E. heterurus* Gould; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 368, p. 2: the species is distinct; HARTERT, J. Ornith. 1900, pp. 359 & 360.

*Agyrtia fluvialis laeta*, n. subsp., Nauta, Upper Amazonia; id. t. c. p. 360.

*Chlorostilbon salvini*, from Panama; id. t. c. p. 361.

*Thalurania ridgwayi*, n. sp., S. Mexico; NELSON, Auk xvii, pp. 262 & 263: *T. venusta* is distinct from *T. columbica*; HARTERT, J. Ornith. 1900, p. 362.

*Heliodora jamesoni* × *Eugenia imperatrix*; E. HARTERT, Bull. B. O. C. x, p. xxxix.

*Helianthea hamiltoni*, n. sp., E. Ecuador; GOODFELLOW, Bull. B. O. C. x, p. xlviii.

*Helianthea* sp.; ALLEN, Bull. Amer. Mus. xiii, p. 139: probably females of *Leucuria phalerata*; id. t. c. p. 184.

*Lafresnayeia cinereorufa* Boucard = *L. lafresnayeia* Bois.; HARTERT, J. Ornith. 1900, p. 364: *L. gayi* should stand as *L. saül*; id. t. c. p. 364.

*Calypte costae* × *Stellula calliope*; HARTERT, Bull. B. O. C. x, p. xxxix.

## Sub-order COLII.

*Colius affinis*, note on; SHARPE, P. Zool. Soc. London 1900, p. 600: *C. macrourus pulcher*, n. subsp., Teita and Taweta, E. Africa; NEUMANN, J. Ornith. 1900, p. 190.

## Order TROGONES.

*Trogon virginalis*, Cab. et Hein. is distinct from *T. collaris*, Vieill.; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 364, p. 17.

*Trogon* sp. from Guala (W. Ecuador) is probably distinct from *T. melanurus*, iid. t. c. p. 18.

*Harpactes hainanus*, n. sp., Hainan; GRANT, Bull. B. O. C. x, p. xxxvii; id. P. Zool. Soc. London 1900, p. 485.

*Hapaloderma rufiventre*, figured; DUBOIS, Synopsis Avium, pl. ii, fig. 3.

## Order COCCYGES.

## Sub-order MUSOPHAGI.

*Turacus chalcophaps*, figured; HARTERT, Nov. Zool. vii, p. 278, pl. i.

## Sub-order CUCULI.

*Cuculi*. Catalogue of the collection in the Leyden Museum; O. FINSCH, Notes Leyden Mus. xxii, pp. 75-125.

*Cuculus canorus*, parasitic on *Turdus musicus*; READ, Zoologist 1900, p. 520: breeding in the London District; MARTIN, t. c. p. 481: note on; WILSON, t. c. p. 481: note on the habits; MEIKLEJOHN, t. c. pp. 262-264: notes on; WOODRUFFE-PEACOCK, Naturalist 1900, 99-108.



- Cacomantis schistaceigularis*, n. sp., Espiritu Santo, New Hebrides; SHARPE, Ibis 1900, pp. 338 & 339: *C. weiskei*, n. sp., Aroa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 186.
- Chrysococcyx rufomerus*, n. sp., Dammer Isl.; HARTERT, Nov. Zool. vii, p. 21.
- Chalcococcyx innominatus*, n. sp., Kisser Isl., Timor; FINSCH, Notes Leyden Mus. xxii, p. 94: *C. plagosus*, parasitic on *Acanthiza uropygialis* and *Petræa goodenovii*; HALL, Victorian Natural. xvii, p. 128: parasitic on *Pardalotus assimilis*; id. t. c. pp. 40 & 41: *C. maculatus*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 484.
- Coccyzus americanus*, in Colombia; ALLEN, Auk xvii, p. 364: on the shores of Menai Straits; DICKINSON, Ibis 1900, p. 219.
- Eudynamis*. Review of the species; HARTERT, Nov. Zool. vii, pp. 230–232: *E. cyanocephala everetti*, n. subsp., Sumba Isl.; id. t. c. p. 231: *E. orientalis salvadorii*, n. subsp., New Britain; id. t. c. p. 232.
- Centropus sinensis*, embryo and nestlings described and figured; SHELFORD, Ibis 1900, pp. 654–667, pl. xiii, figg. in text 1–5: *C. cupreicauda*, in Uhehe, E. Africa; REICHENOW, Ornith. Monber. viii, p. 4.

## Order SCANSORES.

## Sub-order INDICATORES.

- Indicator barianus* Heuglin is distinct from *I. major*; ALEXANDER, Ibis 1900, p. 426: *I. minor teitensis*, n. subsp., Teita, E. Africa; NEUMANN, J. Ornith. 1900, p. 195: *I. lovati*, n. sp., Abyssinia; GRANT, Bull. B. O. C. x, p. xxxix.

## Sub-order CAPITONES.

- Lybius* Hermann pro *Melanobucco* Shelley; RICHMOND, Auk xvii, p. 179.
- Smilorhis sowerbyi*, in Northern Rhodesia; SCLATER, P. Zool. Soc. London 1900, p. 3.
- Barbatula centralis*, n. sp., Ndussuma, E. Africa; REICHENOW, Ornith. Monber. viii, p. 40: *B. leucomystax*, in Uhehe; id. t. c. p. 4.
- Cyanops mystacophanos*, characters of female described; BUTTIKOFER, Notes Leyden Mus. xxi, p. 160.
- Semnornis*, nomen emend. pro *Pan* Richm. nec Oken; RICHMOND, Auk xvii, p. 179.

## Sub-order RHAMPHASTIDES.

- Rhamphastos carinatus*, from Colombia; ALLEN, Bull. Amer. Mus. xiii, p. 133.

## Order PICIFORMES.

## Sub-order PICI.

- Osteology of the Woodpeckers; SHUFELDT, P. Amer. Phil. Soc. xxxix, No. 164, pp. 578–622, pl. ix.
- Colaptes auratus*, monograph of; BURNS, Wilson Bulletin, No. 31 (2) vii, pp. 1–82: *C. cafer collaris* and *C. cafer saturator*, notes on; NELSON, Auk xvii, pp. 123 & 124.
- Chloronerpes rubripileus*, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 368, p. 14.
- Campothera hausburgi*, n. sp., Mt. Kenya; SHARPE, Bull. B. O. C. x, p. xxxvi.

- Gecinulus viridanus*, colours of the soft parts of ♂ and ♀; LA TOUCHE, Ibis 1900, pp. 43 & 44.
- Melanerpes dubius verzevici*, n. subsp., Mexico; NELSON, Auk xvii, p. 259: *M. frontalis*, n. sp., Mexico; id. t. c. pp. 257 & 258: *Melanerpes cruentatus*, and *M. hargitti*, figured (heads): DUBOIS, Synopsis Avium, pl. ii.
- Dendrocopus major* and its allies; HARTERT, Nov. Zool. vii, pp. 527-531: *D. major anglicus*, n. subsp.; id. t. c. p. 528.
- Dryobates villosus intermedius*, n. subsp., Mexico; NELSON, Auk xvii, pp. 259 & 260.
- Picoides arcticus tenuirostris*, n. subsp., Oregon and California; BANGS, Auk xvii, pp. 131 & 132: *P. americanus bacatus*, n. subsp., Eastern North America; id. t. c. pp. 136-138: *P. americanus labradorius*, n. subsp., Labrador; id. t. c. p. 138.
- Dendromus malherbei nyansae*, n. subsp., Muansa, E. Africa; NEUMANN, J. Ornith. 1900, p. 204: *D. malherbei fulleborni*, n. subsp., Lake Nyassa; id. t. c. pp. 204 & 205: *D. taeniolaemus* (1) and *D. neumanni* (2) figured; id. t. c. Taf. I.
- Dendropicus guineensis massaicus*, n. subsp., Lake Nguruman, E. Africa; NEUMANN, t. c. p. 206: *D. guineensis centralis*, n. subsp., Muansa, E. Africa; id. t. c. pp. 206 & 207: *D. guineensis sharpei*, from Uganda; id. t. c. p. 207: *D. simoni*, n. sp., Abyssinia; GRANT, Bull. B. O. C. x, p. xxxviii.
- Iyngipicus obsoletus ingens*, n. subsp., Nairobi, Brit. E. Africa; HARTERT, Nov. Zool. vii, p. 33.
- Mesopicus goertæ* and its allies, Notes on *M. goertæ abessinicus*, n. subsp., N.E. Africa: *M. goertæ centralis*, Equat. Africa; REICHENOW, Ornith. Moub. viii, pp. 58 & 59: *M. rhodeogaster* Fisch. & Reichen. = *M. spodocephalus* (Rüpp.); NEUMANN, J. Ornith. 1900, p. 201: *M. griseocephalus*, on Kilimandjaro; id. t. c. p. 201.
- Lepocestes sinensis*, colours of the soft parts of ♂ and ♀; LA TOUCHE, Ibis 1900, p. 43.
- Campephilus principalis*, in Louisiana; BERGER, Auk xvii, pp. 97-99.
- lynx ruficollis* Wagl. pro *I. pectoralis* Vig.; RICHMOND, Auk xvii, p. 179.

## Order PASSERIFORMES.

## Family PTEROPTOCHIDÆ.

- Scytalopus analis*, figured; DUBOIS, Synopsis Avium, pl. iii, fig. 2.
- Zeledonia*, an Oscinine form, not related to *Scytalopus*; PYCRAFT, Bull. B. O. C. xi, p. 12.

## Family FORMICARIIDÆ.

- Thamnophilus torquatus*, ♂ ♀, figured; DUBOIS, Synopsis Avium, pl. v, figg. 1 & 2.
- Dysithamnus flemmingi*, n. sp., N. Ecuador; HARTERT, Bull. B. O. C. xi, pp. 38 & 39.
- Myrmotherula guayabambæ*, n. sp., Peru; SHARPE, Bull. B. O. C. xi, p. 2: *M. sanctæ-martæ*, n. sp., Valparaiso, U.S. Colombia; ALLEN, Bull. Amer. Mus. xiii, pp. 160 & 161: *M. brevicauda*, ♂ ♀, figured; DUBOIS, Synopsis Avium, pl. vi, figg. 2 & 3.
- Formicivora tobagensis*, n. sp., Tobago; DALMAS, Mem. Soc. zool. France xiii, p. 141.
- Hypocnemis naevioides*, figured; DUBOIS, Synopsis Avium, pl. iii, fig. 3.
- Manikup* Desmarest pro *Pithys* Vieill.; RICHMOND, Auk xvii, p. 179.
- Grallaria bangsi*, n. sp., El Libano, U.S. Colombia; ALLEN, Bull. Amer.

- Mus. xiii, pp. 159 & 160 : *G. parambae*, n. sp., N. Ecuador ; ROTHSCCHILD, Bull. B. O. C. xi, pp. 36 & 37 : *G. gigantea*, figured ; DUBOIS, Synopsis Avium, pl. vi, fig. 1.  
*Grallaricula cumanensis*, n. sp., Venezuela ; HARTERT, Bull. B. O. C. xi, pp. 37 & 38.

### Family DENDROCOLAPTIDÆ.

- Geositta brevirostris*, n. sp., Patagonia ; SCOTT, Bull. B. O. C. x, p. lxiii : *G. rufipennis* and *G. isabellina*, figured ; DUBOIS, Synopsis Avium, pl. vii.  
*Upucerthia darwini*, n. sp., Mendoza : *U. saturator*, n. sp., Chile : *U. fitzgeraldi*, n. sp., Argentina ; id. t. c. p. lxiii.  
*Cinclodes oustaleti*, n. sp., Chili : *C. molitor*, n. sp., Chile : *C. oreobates*, n. sp., Colombia : *C. sparsimstriatus*, n. sp., Peru [= *C. taczanowskii*, Berl.] ; id. t. c. p. lxii.  
*Henicornis wallisi*, n. sp., Patagonia ; id. t. c. p. lxiii.  
*Sittasomus sylvioides jaliscensis*, n. subsp., Mexico ; NELSON, Auk xvii, pp. 264 & 265.  
*Dendroornis flavigaster megarhynchus*, n. subsp., S.W. Mexico ; id. t. c. p. 265 : *D. striatigularis*, n. sp., Alta Mira, Mexico ; RICHMOND, P. U. S. Mus. xxii, pp. 317 & 318 : *D. guttata*, figured : DUBOIS, Synopsis Avium, pl. vi, fig. 2.  
*Picolaptes albolineatus*, figured ; DUBOIS, Synopsis Avium, pl. vi, fig. 1.  
*Dendrocolaptes sancti-thomae*, figured ; DUBOIS, Synopsis Avium, pl. v, fig. 3.

### Family TYRANNIDÆ.

See DUBOIS (138).

- Agriornis poliosoma*, n. sp., Patagonia ; SCOTT, Bull. B. O. C. x, p. lv : *A. leucurus*, n. sp., Patagonia ; id. t. c. p. lxiv.  
*Ochthaea jesupi*, n. sp., San Lorenzo, U.S. Colombia ; ALLEN, Bull. Amer. Mus. xiii, pp. 151 & 152 : *O. olivacea*, n. sp., Valparaiso, U.S. Colombia : id. t. c. p. 152.  
*Muscisaxicola garretti*, n. sp., Patagonia ; SCOTT, Bull. B. O. C. x, p. lv [= *M. capistrata* Burm. ; SCHALOW, Ornith. Monber. 1900, p. 97] : *M. hatcheri*, n. sp., Patagonia ; id. t. c. p. lv.  
*Myiopygia placens jaliscensis*, n. subsp., Mexico ; NELSON, Auk xvii, p. 264.  
*Phyllomyias venezuelensis*, n. sp., Venezuela ; HARTERT, Bull. B. O. C. xi, p. 39.  
*Myiozetetes texensis* (Giraud) = *M. superciliosus* (Bp.) ; NELSON, Auk xvii, p. 124 : *M. similis superciliosus* is the name for the Central American form ; id. t. c. p. 124.  
*Myiobius assimilis*, n. sp., Valparaiso, U.S. Colombia ; ALLEN, Bull. Amer. Mus. xiii, pp. 144 & 145.  
*M. lutea*, n. sp., N.W. Ecuador ; HARTERT, Bull. B. O. C. xi, p. 40.  
*Sayornis saya yukonensis*, n. subsp., Alaska ; BISHOP, Auk xvii, pp. 115 & 116 : *S. nigricans* and its subspecies, notes on the distribution ; NELSON, Auk xvii, pp. 124 & 125.  
*Empidonax timidus*, n. sp., Mexico ; NELSON, t. c. p. 263 : *E. bairdi perplexus*, n. subsp., Mexico ; id. t. c. pp. 263 & 264.  
*Contopus richardsonii saturatus*, n. subsp., Alaska ; BISHOP, Auk xvii, pp. 116-118.

### Family PIPRIDÆ.

- Pipra opalizans*, note on ; SCHULZ, J. Ornith. 1900, pp. 242 & 243.  
*Chiroxiphia pareola atlantica*, n. subsp., Tobago ; DALMAS, Mem. Soc. zool. France xiii, p. 139.

## Family COTINGIDÆ.

- Pachyrhamphus salvini*, nomen emend. pro *P. similis*, Salvin nec Cherrie : DUBOIS, Synopsis Avium, Fasc. iii, p. 212.  
*Lipaugus holerythrus*, figured ; DUBOIS, Synopsis Avium, pl. viii, fig. 1.  
*Attila braziliensis parambæ*, n. subsp., N. Ecuador ; HARTERT, Bull. B. O. C. xi, p. 39.  
*A. parvirostris*, n. sp., Minca, Santa Marta ; ALLEN, Bull. Amer. Mus. xiii, p. 153 : *A. rufipectus*, n. sp., Las Nubes, U.S. Colombia ; id. t. c. pp. 153 & 154 ; *A. citreopygius*, figured ; DUBOIS, Synopsis Avium, pl. viii, fig. 2.

## Family PITTIDÆ.

- Pitta vigorsii*, from Dammer Isl. ; HARTERT, Nov. Zool. vii, p. 18.

## Family ATRICHORNITHIDÆ.

- Atrichia clamosa*, nest and eggs described ; LE SOUËF, Ibis 1900, pp. 462 & 463.

## Family HIRUNDINIDÆ.

See DUBOIS (138).

- Delichon* Moore vice *Chelidon* Boie [preoccupied] ; OBERHOLSER, P. U. S. Mus. xxii, pp. 227 & 228.  
*Chelidon urbana*, its life history in Russia ; WAGNER, Mem. Ac. St. Petersb. (8) x, pp. 1-125, pls. i-vii.  
*Ptyonoprogne* Reichenb. is the proper generic name for the Crag Martins, *Biblis*, being preoccupied in Lepidoptera ; OBERHOLSER, P. U. S. Mus. xxii, p. 227.  
*Hirundo rustica*, geographical distribution in Hungary during the year 1898 ; GAAL DE GYULA, Aquila vii, pp. 8-379, taf. 1-32 : influenced by time ; HEGYFOKY, t. c. pp. 380-391, taf. 33-38 : note on ; BERNARD, Ornith. x, p. 50 : *H. neoxena*, notes on ; HALL, Victorian Natural. xvii, pp. 48-52 : *H. cucullata* and *H. rustica*, migration on the Congo ; PETIT, Ornith. x, pp. 51 & 52.  
*Psaldiprocne percivali*, in Mozambique ; SHARPE, Ibis 1900, p. 114.

## Family MUSCICAPIDÆ.

See DUBOIS (138).

- Micræca assimilis* and *M. pallida*, nests and eggs described ; LE SOUËF, Ibis 1900, pp. 458 & 459 : *M. addita*, n. sp., Mt. Mada, Buru ; HARTERT, Nov. Zool. vii, p. 234 : *M. viridiflava*, n. sp., S.E. New Guinea ; W. ROTHCHILD & E. HARTERT, Bull. B. O. C. xi, p. 26.  
*Bradyornis grisea* and allies, note on ; SHARPE, Ibis 1900, pp. 112 & 113 : *B. kavirondensis*, n. sp., Kwa Kissero, E. Africa ; NEUMANN, J. Ornith. 1900, pp. 257 & 258.  
*Dioptrornis trothæ*, n. sp., Rungwe, E. Africa ; REICHENOW, Ornith. Monber. viii, p. 5.  
*Muscicapa grisola sibirica*, n. subsp., E. Siberia ; NEUMANN, J. Ornith. 1900, pp. 259 & 260 : *M. fülleborni*, n. sp., Rupira, N. of Lake Nyasa ; REICHENOW, Ornith. Monber. viii, p. 122 : *M. toruensis*, n. subsp., Toru, Equat. Africa ; HARTERT, Nov. Zool. vii, p. 37.  
*Siphia everetti* (14) and *S. beccariana* (15), figured ; BÜTTIKOFER, Notes Leyden Mus. xxi, pls. 14 & 15 : *S. hainana*, n. sp., Hainan ; GRANT, Bull. B. O. C. x, p. xxxvi : *S. hainana*, ♂ and ♀ described ; GRANT, P. Zool. Soc. London 1900, pp. 480 & 481 : *S. everetti*, figured, and



- plumages described; BÜTTIKOFER, Notes Leyden Mus. xxi, pp. 192-194, pl. 14: *S. beccariana*, figured, id. t. c. pl. 15.
- Cyornis brevirostris*, n. sp., Southern Shan States; BINGHAM, Ann. Nat. Hist. (7) v, p. 359.
- Nitidula hodgsoni*, on the Larut Hills; BUTLER, J. Straits Asiat. Soc. No. 32, p. 18.
- Petræa campbelli*, nest and eggs described; LE SOUËF, Ibis 1900, pp. 459 & 460.
- P. ambrynnensis*, n. sp., Ambryn Isl., New Hebrides; SHARPE, Ibis 1900, p. 341.
- Muscicapa tricolor* ♀ Temm. = *Erythromyias dumetoria* (Wall.); FINSCH, Notes Leyden Mus. xxii, p. 197.
- Erythromyias*, sp. n. (?), Mt. Penrissen, Sarawak; SHELFORD, J. Straits Asiat. Soc. No. 33, p. 14: *E. buruensis*, figured; HARTERT, Nov. Zool. vii, p. 234, pl. iv, fig. 3.
- Poliomyias luteola*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 480.
- Dammeria henrici* ♂ ♀ fully described; HARTERT, Nov. Zool. vii, pp. 14 & 15.
- Muscicapa tricolor* ♂ Temm. = *Muscicapula hyperythra* (Blyth); FINSCH, Notes Leyden Mus. xxii, p. 199.
- Gerygone placida*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. ii, p. 3: *G. kuhni*, n. sp., Dammer Isl.; HARTERT, Nov. Zool. vii, p. 15.
- Eugerygone*, n. g., type *E. rubra* (Sharpe); FINSCH, Notes Leyden Mus. xxii, p. 200.
- Chasiempis gayi*, nest and eggs, figured; ROTHSCILD, Avif. Laysan, pt. iii, pl. lxxxi, fig. 1.
- Metabolus rugensis*. Notes on plumages. Nests and eggs described; HARTERT, Nov. Zool. vii, pp. 4 & 5.
- Pæcilodryas cyanus salvadorii*, n. subsp., S.E. New Guinea; W. ROTHSCILD & E. HARTERT, Bull. B. O. C. xi, p. 26: *P. salvadorii*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 1.
- Pholia*, n. gen., type *P. hirundinea*, n. sp., Rungwe, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 99.
- Hyliota marginalis*, n. sp., Lumbuti, E. Africa; id. t. c. p. 5.
- Xanthopygia narcissina* and *X. fuliginosa*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 480.
- Alcippe abyssinica*, figured; SHELLEY, B. Africa, ii, pt. ii, pl. ii, fig. 1: *A. kilimensis* Shelley = *Lioptilus abyssinicus* (Rupp.); GRANT, Ibis 1900, pp. 173 & 174. [Cf. SHARPE, P. Z. S. 1884, p. 231.]
- Lioptilus galinieri* (Guer.) is a *Parisoma*; GRANT, Ibis 1900, p. 153.
- Polioptila*. Review of the genus; HELLMAYR, Nov. Zool. vii, pp. 536-538: *P. nigriceps major*, Peru: *P. nigriceps anteocularis*, Colombia, nn. subsp.; id. t. c. p. 538.
- Parisoma catolercum*, n. sp., Chamba, Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 5: *P. lugens*, from Abyssinia distinct from *P. lugens* Sharpe, nec Rüppell which = *P. jacksoni*, n. sp.; SHARPE, Bull. B. O. C. x, p. xxviii: cf. GRANT, Ibis 1900, p. 153: *Sylvia blanfordi* is a *Parisoma*; id. t. c. p. 154: notes on; GRANT, Nov. Zool. vii, p. 253.
- Chloropeta icterina*, from Mt. Kenya; SHARPE, P. Zool. Soc. London 1900, pp. 608 & 609.
- Batis molitor*, note on; ALEXANDER, Ibis 1900, pp. 89 & 90.
- Pachyprora fratrum*, n. sp., Zululand; SHELLEY, Ibis 1900, pp. 522 & 523 note.
- Platystira peltata*, from Santa Lucia Bay; WOODWARD, Ibis 1900, p. 522.
- Chenorhamphus grayi*, from the Ambernoh River, Dutch New Guinea; ROTHSCILD, Bull. B. O. C. x, p. ci.

- Erythrocercus francisci*, probably adult of *E. livingstonei*; ALEXANDER, Ibis 1900, p. 90.
- Rhipidura devisi* nomen emend. pro *R. albicauda* De Vis nec North; DUBOIS, Syn. Av. Man. d'Orn. Fasc. iv, p. 276 : *R. erromangæ*, n. sp., New Hebrides; SHARPE, Ibis 1900, pp. 340 & 341.
- Myiagra oceanica*, nests and eggs described; HARTERT, Nov. Zool. vii, pp. 5 & 6.
- Cryptolopha fulvifacies*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 481 : *C. cebuensis*, nomen emend. pro *C. flavigularis*, Bourns and Worc. nec Godw.-Aust. : DUBOIS, Synopsis Avium, Fasc. iv, p. 287.
- Arses batantæ* Sharpe = *A. telescopthalma* (Garn.); FINSCH, Notes Leyden Mus. xxii, p. 56.
- Piezorhynchus reichenowi*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 2.
- Heteranax mundus*, from Dammer Isl.; HARTERT, Nov. Zool. vii, p. 14.

### Family CAMPOPHAGIDÆ.

See DUBOIS (138).

- Graucalus purus* Sharpe = *G. cæsius* (Licht.); GRANT, Ibis 1900, pp. 171 & 172 : *G. cornix*, n. sp., Aroa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 187 : *G. papuensis*, nest and eggs described; LE SOUËF, Ibis 1900, p. 615.
- Pericrocotus cantonensis*, *P. griseigularis*, and *P. cinereus*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 479.
- Lalage sharpei*, n. sp., Samoa; ROTHSCHILD, Bull. B. O. C. x, p. xl.

### Family PYCNONOTIDÆ.

See DUBOIS (138).

- Cerasophila*, n. g., type *C. thompsoni*, n. sp., Southern Shan States; BINGHAM, Ann. Nat. Hist. (7) v, pp. 358 & 359.
- Brachypodius baweanus*, n. sp., Bawean Isl., Java; FINSCH, Notes Leyden Mus. xxii, pp. 209-211.
- Criniger sordidus*, n. sp., Lower Siam; RICHMOND, P. U. S. Mus. xxii, p. 320.
- Chlorocichla occidentalis*, eggs described; ALEXANDER, Ibis 1900, p. 73.
- Phyllostrephus terrestris* Swains. (March 1837) pro *P. capensis* Swains. (July 1837); RICHMOND, Auk xvii, p. 179.
- Xenocichla flavicollis shelleyi*, n. subsp., Muansa, E. Africa; NEUMANN, J. Ornith. 1900, p. 292 : *X. kakamegæ*, n. sp., Nandi, Equat. Africa; SHARPE, Bull. B. O. C. xi, p. 29.

### Family TIMELIIDÆ.

See DUBOIS (138).

- Eremiornis*, n. g., type *E. carteri*, n. sp., N.W. Australia; NORTH, Victorian Natural. xvii, pp. 78 & 79, p. 93.
- Henicurus sinensis*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 474 : *H. schistaceus*, on the Larut Hills; BUTLER, J. Straits Asiat. Soc. No. 32, p. 19.
- Grallina picata*, note on the nest building; LE SOUËF, Knowledge xxiii, pp. 93 & 94 cum fig.
- Drymædus brevicauda* De Vis, an *Amalocichla*; W. ROTHSCHILD & E. HARTERT, Bull. B. O. C. xi, pp. 26 & 27.

- Trochalopteron ripponi*, n. sp., S. Shan States ; OATES, Bull. B. O. C. xi, pp. 10 & 11.
- Pinarornis plumosus*, notes on ; ALEXANDER, Ibis 1900, p. 80.
- Pomatorhinus stridulus*, note on ; GRANT, Ibis 1900, p. 590 : *P. temporalis*, figured ; NORTH, Agric. Gaz. N. S. W. xi, pl. xv, fig. 1.
- Garrulax semitorquata*, n. sp., Hainan ; GRANT, B. O. C. x, p. xlix ; id. P. Zool. Soc. London 1900, p. 475.
- Crateropus hindei*, n. sp., Athi River, Brit. E. Africa ; SHARPE, Bull. B. O. C. xi, p. 29.
- Scæorhynchus*. Review of the species ; HARTERT, Nov. Zool. vii, pp. 548 & 549 ; *S. ruficeps bakeri*, n. subsp., N. Cachar ; *S. gularis transfluvialis*, n. subsp., Cachar ; id. t. c. p. 548.
- Androphilus disturbans*, n. sp., Buru ; HARTERT, Nov. Zool. vii, p. 238.
- Malaccocincla büttikoferi*, n. sp., Borneo ; FINSCH, Notes Leyden Mus. xxii, pp. 218 & 219.
- Turdinus jacksoni*, n. sp., Nandi, Equat. Africa ; SHARPE, Bull. B. O. C. xi, p. 29.
- Drymocataphus cinnamomeus*, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 12.
- Crateroscelis pectoralis* and *C. rufobrunnea*, nn. spp., S.E. New Guinea ; W. ROTHSCHILD & E. HARTERT, Bull. B. O. C. xi, pp. 25 & 26.
- Turdinulus granti*, n. sp., Lower Siam ; RICHMOND, P. U. S. Mus. xxii, pp. 320 & 321.
- Stachyridopsis sulphurea*, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 11 : *S. ruficeps*, in Hainan ; GRANT, P. Zool. Soc. London 1900, p. 476.
- Scheniparus intermedius*, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 11 : *S. variegatus* Styan = *S. genestieri* Oust. ; GRANT, Ibis 1900, p. 592.
- Alcippe fratercula*, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 11 : *A. kilimensis* Shelley = *A. abyssinica* ; SHELLEY, B. Africa ii, Part II, p. 210, pl. ii, fig. 1.
- Yuhina ampetina*, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 12.
- Siva wingatei*, n. sp., Yun-nan ; GRANT, Bull. B. O. C. x, p. xxxviii, Ibis 1900, p. 593.

### Family MIMIDÆ.

- Orpheus montanus*, date of discovery and type locality ; COUES, Auk xvii, pp. 68 & 69.
- Mimus gilvus tobagensis*, n. subsp., Tobago ; DALMAS, Mem. Soc. Zool. France xiii, p. 134.
- Harporhynchus curvirostris maculatus*, n. subsp., Mexico ; NELSON, Auk xvii, pp. 269 & 270.

### Family TROGLODYTIDÆ.

- Thryothorus felix grandis*, n. subsp., Mexico ; NELSON, Auk xvii, p. 269.
- Anorthura meligera*, n. sp., Alaska ; OBERHOLSER, Auk xvii, pp. 25 & 26.
- Odontorhynchus branickii minor*, n. subsp., N. Ecuador ; HARTERT, Bull. B. O. C. xi, p. 400.
- Pseudoxenicus*, n. g., type *P. superciliaris* (Bp.) ; FINSCH, Notes Leyden Mus. xxii, pp. 213 & 214.

## Family CINCLIDÆ.

*Cinclus cinclus*, in Saxony; NITSCHÉ-THARANDT, SB. Ges. Isis 1900, pp. 32-35 : *C. melanogaster*, in Corsica; SAPSWORTH, Bull. B. O. C. xi, p. 12.

## Family TURDIDÆ.

Monograph of the Turdidæ or family of Thrushes. By HENRY SEEBOHM (edited after the author's death by R. BOWDLER SHARPE), London, 1900, 4to, pts. viii, ix, x.

*Geocichla varia*, nest and eggs; NOBLE, Bull. B. O. C. x, p. xlvii : *G. sibirica*, and *G. varia*, occurrence in Europe; MARTORELLI, Ornith. x, pp. 241-291 : *G. papuensis*, from Aroa River, British New Guinea; ROTHSCCHILD, Bull. B. O. C. x, p. xlv : *G. heinii*, nest and eggs described; LE SOUËF, Ibis 1900, p. 464 : *G. dumasi*, figured; HARTERT, Nov. Zool. vii, p. 239, pl. iv, fig. 3 : *G. gurneyi kilimensis*, n. subsp., Kifinika, Kilimanjaro; NEUMANN, J. Ornith. 1900, p. 310 : *G. litsitsirupa stierlingi*, n. subsp., Iringa Isl., C.E. Africa; REICHENOW, Ornith. Monber. viii, p. 5.

*Hylocichla fuscescens*, in Colombia; ALLEN, Auk xvii, p. 367 : and *H. fuscescens salicicola*, range in North America; HOWE, Auk xvii, pp. 18-25 : *H. fuscescens fuliginosa*, n. subsp., Newfoundland; id. t. c. pp. 270 & 271.

*Turdus migratorius*, note on the nesting; HERRICK, Auk xvii, pp. 100-103, pls. ii, iii : *T. saturatus*, *T. pelios* and allies, notes on; HARTERT, Nov. Zool. vii, p. 53 : *T. obscurus*, in Italy; MARTORELLI, Avicula iv, pp. 33-35.

*Merula melanaria*, n. sp., S.E. New Guinea; MADARÁSZ, Ornith. Monber. viii, p. 23 : *M. torquata*, notes on; FOX, Zoologist 1900, pp. 1-10 : *M. dubius* in Friesland; SNOUCKAERT VAN SCHAUERG, Ornith. Monber. viii, pp. 18 & 19 : *M. atrigularis*, *M. obscura*, *M. ruficollis*, *M. naumanni*, *M. fuscata*, their occurrence in Europe; MARTORELLI, Ornith. x, pp. 241-291.

*Myiophonus borneensis*, plumages described; BÜTTIKOFER, Notes Leyden Mus. xxi, pp. 258-261.

*Zeledonia*, an Oscinine form; PYCRAFT, Bull. B. O. C. xi, p. 12.

*Davilias philomela*, in the Zambesi region; ALEXANDER, Ibis 1900, p. 86.

*Pinarochroa ernesti*, n. sp., Mt. Kenya; SHARPE, Bull. B. O. C. x, p. xxxv : note on; id. P. Zool. Soc. London 1900, pp. 606 & 607.

*Erythropgia ukambensis*, n. sp., Ukambani, Brit. E. Africa; SHARPE, Bull. B. O. C. xi, p. 29.

*Cossypha caffra mawensis*, n. subsp., Mountains of Mau, E. Africa; NEUMANN, J. Ornith. 1900, p. 309 : *C. caffra iolaema*, n. subsp., German East Africa; REICHENOW, Ornith. Monber. viii, p. 5 : *C. heuglini*, note on; ALEXANDER, Ibis 1900, pp. 85 & 86 : *C. omoensis*, n. sp., Omo River, Equat. Africa; SHARPE, Bull. B. O. C. xi, p. 28.

*Thamnolæa argentata*, n. sp., Ukinga, N. of Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 100 : *T. semirufa*, note on the plumage; GRANT, Ibis 1900, p. 170 : *T. arnotti*, note on; ALEXANDER, Ibis 1900, pp. 87 & 88.

*Alethe fülleborni*, n. sp., Tandalla, N. of Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 100 : *A. poliothorax*, n. sp., Cameroons; REICHENOW, Ornith. Monber. viii, p. 6.

*Motacilla angolensis*, in Mashonaland; MARSHALL, Ibis 1900, p. 228.

*Sialia sialis*, note on the nesting; HERRICK, Auk xvii, pp. 100-103, pls. ii & iii.



- Ruticilla titys*, at Brighton in December; BRYANT, Zoologist 1900, p. 37: in Aberdeen; SIM, Ann. Scott. Nat. Hist. 1900, p. 121: in the Solway Area; MACPHERSON, t. c. pp. 47 & 48: *R. cairei*, in Bosnia, distinct from *R. titys*; BERLEPSCH, J. Ornith. 1900, p. 127; MATSCHIE, t. c. p. 127.
- Pratincola rubetra spatzi*, n. subsp., Tunis; ERLANGER, J. Ornith. 1900, p. 101: *P. rubicola*, breeding in Upper Silesia; KOLLIBAY, Ornith. Monber. viii, p. 81.
- Tarsiger olivaceus*, n. sp., Ukinga, N. of Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 100.
- Saxicola oreophila* nomen emend. pro *S. montana* Gould nec Koch; OBERHOLSER, P. U. S. Mus. xxii, pp. 221 & 222: *S. semenowi*, n. sp., Eastern Persia; BIANCHI & ZARUDNY, Annuaire Mus. St. Petersb. v, pp. 187-189: *S. pileata albinotata*, n. subsp., Ssero, North-west Masailand; NEUMANN, J. Ornith. 1900, p. 313.

### Family SYLVIIDÆ.

- Sylvia nisoria*, in Lincolnshire; CATON HAIGH, Knowledge xxii, No. 170, p. 278.
- S. atricapilla*, in Perthshire in December; DAVIDSON, Ann. Scott. Nat. Hist. 1900, p. 121: *S. subalpina leucopogon* (Heckel), in Tunis; ERLANGER, J. Ornith. 1900, p. 102: *S. blanfordi* is a *Parisoma*; GRANT, Ibis 1900, p. 154: id. Nov. Zool. vii, p. 253: *S. provincialis*, notes on; HUDSON, Humane Review, April 1900, pp. 28-38.
- Phylloscopus rufus*, in Barra; MACGILLIVRAY, Ann. Scott. Nat. Hist. 1900, p. 121: near Edinburgh; CLARKE, t. c. p. 183: in the Clyde district; PATERSON, t. c. p. 246: *P. rufus sylvestris* Meisner, notes on this and other species of *Phylloscopus*; PARROT, J. Ornith. 1900, pp. 455-458: *P. subaffinis*, n. sp., S.W. Kwei-chu, China; GRANT, Bull. B. O. C. x, p. xxxvii: described; id. Ibis 1900, pp. 585 & 586.
- Oreopneuste davidi*, n. sp., Western China; BEREZOWSKI & BIANCHI, Annuaire Mus. St. Petersb. v, p. 211: = *P. bianchii* [nomen emend. pro *Oreopneuste davidi* Berezow. & Bianchi nec Swinh.]
- Hypolais polyglotta*, in Sussex; BUTTERFIELD, Ibis 1900, pp. 569 & 570, Zoologist 1900, p. 518.
- Acrocephalus inexpectatus*, n. sp., Western China; BEREZOWSKI & BIANCHI, Annuaire Mus. St. Petersb. v, pp. 210 & 211: *A. syrinx*, nests and eggs described; HARTERT, Nov. Zool. vii, pp. 3 & 4.
- Tatara vauhani*, n. sp., Pitcairn Isl.; SHARPE, Bull. B. O. C. xi, p. 2.
- Locustella nevia*, nesting in Morayshire; MACKESSACH, Ann. Scott. Nat. Hist. 1900, p. 48.
- Luscinola gracilirostris*, notes on; ALEXANDER, Ibis 1900, p. 81.
- Cettia bivittata*, n. sp., Timor; FINSCH, Notes Leyden Mus. xxii, p. 209.
- Bradypterus castaneus*, n. sp., Cameroons; REICHENOW, Ornith. Monber. viii, p. 6: *B. salvadorii*, n. sp., Gurui and Kilimanjaro; NEUMANN, J. Ornith. 1900, p. 304.
- Apalis equatorialis*, n. sp., Angata anyuk, E. Africa; id. t. c. p. 307: *A. porphyrolema* (1) and *A. griseiceps*, figured; id. t. c. Taf. II.
- Euprinodes hildegarde*, note on; SHARPE, Ibis 1900, pp. 497 & 498.
- Sylvia*, review of the genus: *S. whytei*, notes on: *S. flecki*, n. sp., S. of Lake Ngami: *S. karnapi*, n. sp., E. Cameroons district: *S. fischeri*, n. subsp., Malindi, E. Africa: *S. pallida*, notes on; REICHENOW, Ornith. Monber. viii, pp. 21 & 22: *S. brachyura* Lafr. is distinct from *S. micrura* (Rüpp.); GRANT, Ibis 1900, pp. 154 & 155: *S. minima*, n. sp., Manda Island, E. Africa; id. t. c. p. 156: key to the species; id. t. c. pp. 156 & 157: *S. jacksoni* Sharpe = *S. whytii*

- Shelley; id. t. c. p. 155: *S. baraka* Sharpe = *S. virens* (Cass.); id. t. c. p. 156: *S. major*, n. sp., Usandawe, E. Africa; NEUMANN, J. Ornith. 1900, p. 305: *S. pallida* and *S. minima*, figured; ALEXANDER, Ibis 1900, pl. i, figg. 1 & 2.
- Prinia mystacea*, nest and eggs described; MARSHALL, Ibis 1900, p. 231.
- Burnesia brunneiceps*, n. sp., Rupira, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 122: *B. gracilis*, its flight; ROTHSCHILD, Bull. B. O. C. x, p. c.
- Cisticola aridula*, n. sp., White Nile, 60 miles below Khartoum; WITHERBY, Bull. B. O. C. xi, p. 13: *C. ambigua*, n. sp., Mau, Brit. E. Africa; SHARPE, t. c. p. 28: *C. lovati*, n. sp., Abyssinia; GRANT, Ibis 1900, p. 161: *C. prinoides*, n. sp., Mountains of Mau, E. Africa; NEUMANN, J. Ornith. 1900, p. 304: *C. terrestris*, nest and eggs described; MARSHALL, Ibis 1900, pp. 231 & 232.
- Acanthiza tenuirostris*, n. sp., Leigh Creek, Victoria; ZIETZ, Tr. R. Soc. S. Austral. xxiv, p. 112.
- Sericornis frontalis*, nest and eggs described; LE SOUËF, Victorian Natural. xvii, pp. 145 & 146.
- Smicrorhis flavescens*, nest and eggs described; id. Ibis 1900, pp. 461 & 462.
- Malurus cyaneus* and allies, notes on; HALL, Victorian Natural. xvi, pp. 135-141, xvii, pp. 41 & 42: *M. gouldii* and *M. cyaneus*, notes on the plumage; id. P. Soc. Victoria (2) xii, p. 59.

### Family ARTAMIDÆ.

- Artamus superciliosus*, *A. personatus*, and *A. sordidus*, notes on the nesting; HALL, J. Agric. W. Austral. ii, pp. 388-397 cum figg.

### Family VIREONIDÆ.

- Vireo perquisitor*, n. sp., S. Mexico; NELSON, Auk xvii, pp. 267 & 268: *V. amauronotus strenuus*, n. subsp., Mexico; id. t. c. p. 268.
- Hylophilus brunneus*, n. sp., Las Nubes, U. S. Colombia; ALLEN, Bull. Amer. Mus. xiii, p. 171: *H. pallidifrons*, n. sp., Tobago; DALMAS, Mem. Soc. zool. France xiii, pp. 135 & 136.
- Vireolanius mikettæ*, n. sp., N. Ecuador; HARTERT, Bull. B. O. C. xi, p. 38.

### Family PRIONOPIDÆ.

- Rhectes phaeocephalus*, n. sp., Baillala River, and *R. nigrescens schistaceus*, Aroa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 187.
- Collyriocincla pallidirostris*, nest and eggs described; LE SOUËF, Victorian Natural. xvii, p. 145.
- Pinarolestes dissimilis*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 2.

### Family LANIIDÆ.

- Cracticus rufescens* De Vis, probably distinct from *C. quoyi*; ROTHSCHILD, Bull. B. O. C. x, p. xl.
- Artamia comorensis*, figured; SHELLEY, B. Africa ii, Part I, pl. ii, fig. 1.
- Telephonus reichenovi*, n. sp., East Africa; NEUMANN, J. Ornith. 1900, p. 120: *T. percivali*, n. sp., S. Arabia; GRANT, Bull. B. O. C. x, p. 1.

- Bocagia potteri*, n. sp., Upper Nile; OUSTALET, Bull. Mus. Paris 1900, pp. 225 & 226.
- Dryoscopus nandensis*, n. sp., Nandi, Equat. Africa; SHARPE, Bull. B. O. C. xi, p. 28: *D. fülleborni*, n. sp., Usufua, N. of Nyasa Lake; REICHENOW, Ornith. Monber. viii, p. 39.
- Laniarius mossambicus* Fischer & Reichenow = *L. æthiopicus picatus* Hartl.; NEUMANN, J. Ornith. 1900, p. 271.
- Pachycephala melanura dammeriana*, n. subsp., Dammer Isl.; HARTERT, Nov. Zool. p. 17: *P. arctitorquis*, from Dammer Isl.; id. t. c. p. 17: *P. gutturalis*, notes on; HALL, Victorian Natural. xvii, pp. 52-54: *P. intacta*, n. sp., Malicolo and Espiritu Santo, New Hebrides; SHARPE, Ibis 1900, p. 343: nest and eggs described; FARQUHAR, t. c. p. 611: *P. examinata* and *P. griseonota*, notes on; HARTERT, Nov. Zool. vii, p. 236: *P. peninsule*, nest and eggs described; LE SOUËF, Victorian Natural. xvii, p. 146.
- Lanius excubitor homeyeri*, note on; JOHANSEN, Ornith. Jahrb. xi, pp. 28-34: *L. eleagni*, note on; SUSCHKIN, Bull. B. O. C. xi, p. 5: *L. raddei*, in East Africa; NEUMANN, J. Ornith. 1900, p. 120: *L. reichenowi*, remarks on; id. t. c. p. 266.

### Family SITTIDÆ.

- Sitta europæa britannica*, n. subsp., England; notes on the European species of *Sitta*; HARTERT, Nov. Zool. vii, p. 626: *S. whiteheadi*, note on; SAPSWORTH, Bull. B. O. C. xi, p. 12: *S. yunnanensis*, n. sp., Yun-nan; GRANT, op. cit. x, p. xxxvii: type fully described; id. Ibis 1900, p. 582: *S. magna*, note on; id. t. c. p. 583.

### Family PARIDÆ.

Notes on the Tits of Germany (Die deutschen Meisen); BRAUN, Ornith. Monber. viii, pp. 130-135.

- Parus transcaspicus*, n. sp., Transcaspiian; ZARUDNY, Mem. Ac. St. Petersb. (8) x, p. 203: *P. fülleborni*, n. sp., Undis, E. Africa; REICHENOW, Ornith. Monber. viii, p. 5: *P. nigriloris*, n. sp., Ishigaki, S. Liu Kiu Is.; HELLMAYR, t. c. viii, p. 139: *P. communis italicus*, n. subsp., Tuscany; TSCHUSI & HELLMAYR, Ornith. Jahrb. x, p. 204: *P. montanus kleinschmidti*, n. subsp., England; HELLMAYR, t. c. p. 212: *P. major*, nesting habits; STEELE-ELLIOTT, Zoologist 1900, pp. 423 & 424: *P. afer*, in Northern Rhodesia; SCLATER, P. Zool. Soc. London 1900, p. 3: *P. salicarius kleinschmidti*, in the south of England; HARTERT, Bull. B. O. C. xi, p. 27: *P. nigricinereus* Jackson = *P. funereus*; SHELLEY, B. Africa ii, Part II, p. 227: *P. albiventris* and *P. xanthostomus*, figured; id. t. c. pl. x, figg. 1 & 2: *P. masukuensis*, n. subsp., Masuku range and Nyika plateau, Nyasaland; id. t. c. p. 238: *P. baraka* Jackson = *P. thruppi*; id. t. c. p. 244: *P. cristatus* and *P. salicarius*, and allied forms, notes on; KLEINSCHMIDT, Ornith. Monber. viii, p. 168: *P. rhenanus*, n. sp., Rhine Provinces, id. t. c. p. 168: *P. rufescens barlowi*, n. subsp. Coast range of California, S. of San Francisco; GRINNELL, Condor ii, p. 127.
- Pæcile salicaria neglecta*, n. subsp., Pleskaw, N.W. Russia; ZARUDNY & HÄRMES, Ornith. Monber. viii, p. 19: *P. s. bianchii*, nom. emend.; iid. t. c. p. 67.
- Acredula*, notes on the species in Germany; Kleinschmidt t. c. pp. 167 & 168: *A. dorsalis* and *A. senex*, n. spp., Caucasus; MADARASZ, Termes. Fuzetek xxiii, pp. 198-203, Tab. vii, figg. 1 & 2.
- Ægithalus*, remarks on; HELLMAYR, J. Ornith. 1900, p. 372: *Æ. musculus*, figured; SHELLEY, B. Africa ii, Part II, pl. 11, fig. 2.

- Ægithaliscus pulchellus*, n. sp., S. Shan States; RIPPON, Bull. B. O. C. xi, p. 11.  
*Panurus biarmicus*, notes on; GURNEY, Zoologist 1900, pp. 358–374, pl. v, map: RIDSDALE, t. c. p. 422: NOBLE, t. c. p. 423: MACPHERSON, t. c. p. 478: *P. biarmicus*, figured; BONHOTE, Avicult. Mag. vi, pp. 213–216, pl. iii.

## Family ZOSTEROPIDÆ.

- Zosterops macgillivrayi*, n. sp., Malicolo and Api Is., New Hebrides; SHARPE, Ibis 1900, pp. 345 & 346: *Z. vatensis* Tristram = *Z. griseonota* Gray; id. t. c. p. 346: *Z. semperi owstoni*, n. subsp., Ruk Isl., Carolines, nest and eggs described; HARTERT, Nov. Zool. vii, pp. 2 & 3: *Z. natalis*, figured; SHARPE, Monogr. Christmas Is. p. 49, pl. vi: *Z. neglecta* Seebohm = *Z. palpbrosa* (Temm.); GRANT, P. Zool. Soc. London 1900, p. 469: *Z. buruensis*, notes on; HARTERT, Nov. Zool. vii, p. 237: *Z. obstinatus*, n. sp., Batchian; id. t. c. p. 238: *Z. modesta*, figured; SHELLEY, B. Africa ii, Part I, pl. vi, fig.: *Z. semiflava*, figured; id. t. c. pl. vi, fig. 2: *Z. pallida* (1), *Z. andersoni* (2), *Z. virens* (3), figured; id. t. c. pl. vii: *Z. ficedulina*, figured; id. t. c. Part II, pl. viii, fig. 1: *Z. comorensis*, n. sp., Comoro Is.; id. t. c. p. 196, pl. ix, fig. 1: *Z. demeryi* Büttikofer = *Z. senegalensis*; id. t. c. p. 173: *Z. obsoleta* Büttikofer = *Z. senegalensis*, id. l. c.: *Z. stuhlmanni* Reichenow, *Z. flavilateralis* Reichenow, and *Z. superciliosa* Reichenow = *Z. senegalensis*; id. l. c.: *Z. angazizæ* Milne-Edwards & Oustalet = *Z. kirki*; id. t. c. p. 178: *Z. perspicillata* Shelley = *Z. eurycricota*; id. t. c. p. 182: *Z. scotti* Neumann = *Z. jacksoni*; id. t. c. p. 184: *Z. atmoræi* Sharpe = *Z. capensis*; id. t. c. p. 188: *Z. gloriosæ* Ridgway = *Z. madagascariensis*; id. t. c. p. 194.  
*Malacriops e-newtoni*, figured; id. t. c. pl. ix, fig. 2.  
*Speirops leucophæa*, figured; id. t. c. pl. viii, fig. 2.  
*Tephros ruki*, notes on; HARTERT, Nov. Zool. vii, p. 3.

## Family DICÆIDÆ.

- Dicæum arfakianum*, n. sp., Arfak Mts., New Guinea; FINSCH, Notes Leyden Mus. xxii, p. 70: *D. flammeum*, in South Borneo; BÜTTIKOFER, Notes Leyden Mus. xxi, p. 211 note.  
*Pardalotus punctatus*, *P. assimilis*, and *P. ornatus*, nests described; HALL, J. Agric. W. Austral. ii, pp. 324–329 cum fig.: *P. assimilis* Ramsay = *P. affinis* Gould; id. Victorian Natural. xvii, p. 19 & 20: field notes on a phase of; id. t. c. pp. 20–22, with figure of nest and eggs: said to be foster-parent to a Cuckoo; id. t. c. pp. 40 & 41: *P. punctatus*, figured; BUTLER, Avicult. Mag. vi, pp. 165–167, pl. ii.

## Family NECTARINIIDÆ.

- Nectarinia takazze unisplendens*, n. subsp., Kifinika, Kilimanjaro; NEUMANN, J. Ornith. 1900, p. 300: *N. subfamasa* Salvadori and *N. æneigularis* Sharpe = *N. cupreonitens*; SHELLEY, B. Africa ii, p. 21: *N. deckeni* Höhnelt = *N. johnstoni*; id. t. c. p. 22: *N. melanogastra*, figured; id. t. c. pl. i, fig. 2: *N. jacksoni* Neumann = *N. tacazze*; id. t. c. p. 26: *N. kilimensis*, figured; id. t. c. pl. i, fig. 1: *N. gadowi* Bocage = *N. kilimensis*; id. t. c. p. 28.  
*Æthopyga anomala*, n. sp., Lower Siam; RICHMOND, P. U. S. Mus. xxii, p. 319.



- Cinnyris chloropygia* and its allies; HARTERT, Nov. Zool. vii, p. 51: *C. venusta* and allies, note on; SHARPE, Ibis 1900, pp. 495-497: *C. verticalis*, in Uhehe, C. E. Africa; REICHENOW, Ornith. Monber. viii, p. 4: *C. frenata*, nest and eggs described; ROBINSON & LAVEROCK, Ibis 1900, p. 633: *C. gutturalis*, nest and eggs described; MARSHALL, t. c. p. 236: *C. gutturalis inæstimata*, n. subsp., East Africa; HARTERT in Ansorge's 'Under the African Sun' App. p. 351: *C. g. damarenis* Reichenow = *C. g. inæstimata*; HARTERT, Nov. Zool. vii, p. 51: *C. scioana* (Salvad.) = *C. cruentata* (Rupp.); GRANT, Ibis 1900, p. 144: *C. castaneiventris* Madarasz = *C. eboensis* Jard.; HARTERT, Nov. Zool. vii, p. 50: *C. chaldeus* Büttikofer = *C. cupreus*; SHELLEY, B. Africa ii, Part I, p. 36: *C. nesophilus*, figured; id. t. c. pl. 2, fig. 2: *C. falkensteini*, figured; id. t. c. pl. 3, fig. 1: *C. erikssoni* Trimen = *C. ludoviciensis*; id. t. c. p. 74: *C. mediocris*, figured; id. t. c. p. 79: *C. ansorgii* Hartert = *C. reichenowi*, id. t. c. p. 82: *C. fulleborni*, figured; id. t. c. pl. iv, fig. 1.
- Chalcomitra senegalensis lamperti* (Reichenow) = *C. senegalensis*; id. t. c. p. 91: *C. gutturalis inæstimata* (Hartert) = *C. gutturalis*; id. t. c. p. 93: *C. scioana* Salvadori = *C. cruentata*; id. t. c. p. 100: *C. bradshawi* Sharpe = *C. diminuta*; id. t. c. p. 105: *C. scapulatus* (Roche-brune) = *C. fuliginosa*; id. t. c. p. 109.
- Elæocerthia fischeri* (Reichenow) = *E. verreauxi*; id. t. c. p. 116: *E. thomensis*, figured; id. t. c. pl. 5, fig. 2.
- Cyanomitra ragazzi* (Salvadori) = *C. obscura*; id. t. c. p. 125: *C. bohndorffi* (Reichenow) and *C. viridisplendens* (Reichenow) both = *C. verticalis*; id. t. c. p. 127: *C. newtoni*, figured; id. t. c. pl. 5, fig. 1: *C. obscura neglecta*, n. subsp., Kibuesi, E. Africa; NEUMANN, J. Ornith. 1900, p. 297.
- Anthothreptes orientalis*, figured; SHELLEY, Birds Africa ii, pl. 4, fig. 2.

### Family MELIPHAGIDÆ.

- Myzomela albigula*, figured; HARTERT, Nov. Zool. vii, pl. iv, fig. 1.
- Melithreptus albigularis*, nest and eggs described; LE SOUËF, Ibis 1900, p. 463.
- Glycyphila subocularis*, nest and eggs described; id. t. c. pp. 463 & 464: *G. squamata*, from Dammer Isl.; HARTERT, Nov. Zool. vii, pp. 16 & 17.
- Entomophila picta*, nest and eggs described; NORTH, Victorian Natural. xvii, p. 127.
- Ptilotis proxima*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 3: *P. gracilis*, nest and eggs described; LE SOUËF, Ibis 1900, pp. 615 & 616.
- Entomyza cyanotis harterti*, n. subsp., North Queensland; ROBINSON & LAVEROCK, Ibis 1900, p. 635.
- Philemon argenticeps*, eggs described; LE SOUËF, Ibis 1900, pp. 460 & 461: *P. nove guineæ*, nest and eggs described; id. t. c. pp. 613-615, fig. 2.
- Moho nobilis*, figured; ROTHSCHILD, Avif. Laysan, Part III, pl. lxxii: *M. apicalis*, pl. lxxiii: *M. bishopi*, pl. lxxiv: *M. braccatus*, pl. lxxv.
- Chæoptila angustipluma*, figured; id. t. c. pl. lxxi.

### Family CETHIIDÆ.

- Certhia familiaris* and its allies; HARTERT, Nov. Zool. vii, p. 525: notes on; KLEINSCHMIDT, Ornith. Monber. viii, p. 169: *C. rhenana*, n. sp., Rhine Provinces; id. t. c. p. 169.
- Climacteris weiskei*, n. sp., N. Queensland; REICHENOW, Ornith. Monber. viii, p. 187.

## Family MNIOTILTIDÆ.

- Dendroica discolor* and *D. kirtlandi*, near Toronto; SAMUEL, Auk xvii, p. 391: *D. striata*, *D. castanea*, *D. cærulescens*, *D. blackburnie*, in Colombia; ALLEN, t. c. pp. 366 & 367: *D. cærulea*, nesting habits; SAUNDERS, t. c. pp. 358-362: *D. achrustera*, nomen emend. pro *D. bahamensis* Maynard nec Cory; BANGS, t. c. p. 292.
- Geothlypis trichas* and subspecies; PALMER, Auk xvii, pp. 216-242: *G. trichas modestus*, n. subsp., Mexico; NELSON, t. c. p. 269: *G. trichas ignota*, its proper name; CHAPMAN, t. c. p. 389: *G. agilis* and *G. trichas*, in Colorado; AIKEN, t. c. p. 298: *G. cucullata* (Lath.) vice *G. velata* (Vieill.): *G. nelsoni* nomen emend. pro *G. cucullata* Salv. & Godm.; RICHMOND, t. c. p. 179: *G. maynardi*, n. sp., Bahamas; BANGS, t. c. pp. 290 & 291.
- Basileuterus belli scitulus*, n. subsp., Highlands of Chiapas and Guatemala; NELSON, Auk xvii, p. 268.
- B. conspicillatus* Salvin & Godman = *B. cinereicollis* Sclater; ALLEN, Bull. Amer. Mus. xiii, pp. 175 & 176.
- Wilsonia canadensis*, in Colorado; AIKEN, Auk xvii, p. 298.

## Family MOTACILLIDÆ.

- Motacilla nigricotis*, [potuis melanotis] n. sp., Orange river and Limpopo, S. Africa; SHELLEY, B. Africa ii, Part II, pp. 266-268, pl. 12, fig. 2: *M. vidua*, figured; id. t. c. pl. 12, fig. 1: *M. borealis* and *M. cinereicapilla* are subspecies of *M. flava*; id. t. c. pp. 286 & 287: *M. melanocephala* Licht. has priority over *M. feldeggii* Michah.; id. t. c. p. 291: *M. boarula schmitzi*, n. subsp., Madeira; TSCHUSI, Ornith. Jahrb. xi, p. 223: *M. raii*, at Beaulieu; HINXMAN, Ann. Scott. Nat. Hist. 1900, p. 48.
- Anthus lineiventris*, in N. Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 4.
- A. crenatus*, figured; SHELLEY, B. Africa ii, Part II, pl. 13, fig. 2: *A. calthorpeæ*, figured; id. t. c. pl. 14, fig. 1: *A. brachyurus*, fig. 2: *A. melindæ*, n. sp., Melinda, E. Africa; id. t. c. pp. 305 & 306: *A. gouldi* Fraser is a subspecies of *A. pyrrhonotus* (Vieill.); id. t. c. p. 307: *A. lineiventris*, figured; id. t. c. pl. 13, fig. 1: *A. vaalensis*, n. sp., Northern Natal and Transvaal; id. t. c. p. 311: *A. cockburnie* Oates = *A. sordidus*; id. t. c. p. 314: *A. rufulus camaroonensis*, n. subsp., Camaroon; id. t. c. p. 320: *A. spipoletta*, in Sussex; TICEHURST, Zoologist 1900, p. 278.
- Macronyx fülleborni*, n. sp., Unika Land, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 39.

## Family ALAUDIDÆ.

- Pseudalamon delamerei*, n. sp., Athi River, British East Africa; SHARPE, Bull. B. O. C. x, p. cii.
- Otocoris alpestris praticola*, nesting in Maine; SWAIN, Auk xvii, pp. 387 & 388: *O. balcanica*, specimens exhibited; ROTHSCHILD, Bull. B. O. C. x, p. liii.
- Tephrocorys cinerea* and its allies; HARTERT, Nov. Zool. vii, p. 47.
- Spizocorys athenis*, n. sp., Athi River, British East Africa; SHARPE, Bull. B. O. C. x, p. ci.
- Mirafraga africana* and its allies; HARTERT, Nov. Zool. vii, pp. 45 & 46: *M. a. transvaalensis*, n. subsp., Transvaal; id. t. c. p. 45: *M. a. tropicalis*, n. subsp., Tropical E. Africa; id. t. c. p. 45: *M. a. athi*,

- n. subsp., Athi Plain, British E. Africa; id. t. c. p. 46: *M. cinnamomea*, notes on; id. t. c. p. 46: *M. nigrescens*, n. sp., Elton Pass, N. of Konde Land; REICHENOW, Ornith. Monber. viii, p. 39.
- Ammomanes saturatus*, n. sp., Southern Arabia; GRANT, Nov. Zool. vii, p. 249.
- Pyrhulauda harrisoni*, n. sp., Lake Rudolf, Equat. Africa; id. Bull. B. O. C. xi, pp. 30 & 31.

### Family FRINGILLIDÆ.

- Perissospiza* nomen emend. pro *Pycnorhamphus* Hume nec Rosenberg; OBERHOLSER, P. U. S. Mus. xxii, p. 227.
- Chloridops kona*, figured; ROTHSCILD, Avif. Laysan, Part III, pl. lxx.
- Astragalinus tristis pallidus*, in Colorado; AIKEN, Auk xvii, p. 298.
- Linaria*, notes on various species; DEICHLER, J. Ornith. 1900, pp. 371 & 372.
- Acanthis cannabina*, in Westchester County, New York; THAYER, Auk xvii, pp. 388 & 389.
- Cannabina cannabina minor*, note on; TSCHUSI, Ornith. Jahrb. xi, p. 223.
- Montifringilla altaica* (Eversmann, 1848) has priority over *M. sordida* (Stoliczka); OBERHOLSER, P. U. S. Mus. xxii, p. 225.
- Leucosticte kadiaka*, n. sp., Kadiak Isl., Alaska; MCGREGOR, Condor iii, No. 1.
- Rhyncostruthus percivali*, n. sp., S. Arabia; GRANT, Bull. B. O. C. xi, p. 30.
- Passer domesticus*, note on the sexual differences; BUTLER, Zoologist 1900, pp. 74 & 75: nesting habits; STEELE-ELLIOTT, t. c. p. 424: READ, t. c. p. 519: *P. rutilans*, eggs described; LA TOUCHE, Ibis 1900, p. 35: *P. diffusus* and allies, notes on; HARTERT, Nov. Zool. vii, pp. 43-45: *P. gongonensis* Oust., a large form of *P. swainsoni*; id. t. c. pp. 44 & 45: *P. motitensis* and allies; id. t. c. pp. 42 & 43.
- Linurgus kilimensis*, figured; NEUMANN, J. Ornith. 1900, Taf. II, fig. 3.
- Serinus sharpei*, n. sp., Marangu, Kilimanjaro; id. t. c. p. 287: *S. melano-chrous*, n. sp., Ukinga, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 122.
- Emberiza citrinella*, red-throated variety from the Yenesei Valley; POPHAM, Bull. B. O. C. xi, p. 41: *E. cioides*, nest and eggs described; LA TOUCHE, Ibis 1900, pp. 36 & 37.
- Citrinella corsicana*, n. sp., Corsica; KONIG, Ornith. Monber. viii, p. 183.
- Zonotrichia macconnelli*, n. sp., Mt. Roraima, British Guiana; SHARPE, Tr. Linn. Soc. London (2), Zool. viii, p. 53, pl. 4, fig. 1: *Z. pileata*, fig. 2, figured; id. t. c.: *Z. querula*, in California; EMERSON, Condor ii, p. 145.
- Amphispiza bilineata pacifica*, n. subsp., Mexico; NELSON, Auk xvii, p. 267.
- Ammodramus bairdi*, on Long Island; HELME, Auk xvii, p. 296.
- Melospiza sanaka*, n. sp., Sanak Isl., Alaska; MCGREGOR, Condor iii, No. 1: *M. melodia kenaiensis*, n. subsp., Alaska; RIDGWAY, Auk xvii, p. 29.
- Passerella iliaca insularis*, n. subsp., Alaska; id. t. c. p. 30: *P. iliaca annectens*, n. subsp., Alaska; id. t. c. p. 30.
- Pipilo maculatus falcifer*, n. subsp., San Francisco Bay Region; MCGREGOR, Condor ii, p. 43.
- Zamelodia melanocephala microrhyncha*, n. subsp., Pacific coast region of California, Oregon and Washington; GRINNELL, Condor ii, p. 128.
- Phrygilus princetonianus*, n. sp., Patagonia; SCOTT, Bull. B. O. C. x, p. lxiv.

## Family DREPANIDÆ.

- Drepanidæ*, a key to the genera; ROTHSCILD, Avif. Laysan, Part III, p. 211.
- Heterorhynchus lucidus*, figured; id. t. c. pl. liii.
- Hemignathus ellisianus*, figured; id. t. c. pl. xlvii.
- Drepanorhynchus*, n. g., type *D. funereus* (Newton); id. t. c. pp. 163-165, pl. lxii.
- Drepanis pacifica*, figured; id. t. c. pl. lxi.
- Palmeria dolei*, figured; id. t. c. pl. lx.
- Chlorodrepanis*, n. g. [for *Himatione* Cab., part], type *C. stejnegeri* (Scott Wilson); id. t. c. p. 131: key to the species of the genera *Himatione* and *Chlorodrepanis*; id. t. c. p. 131.
- C. virens*, figured; id. t. c. pl. lix, fig. 1: nest and eggs, pl. lxxxi, fig. 2: *C. chloris*, pl. lix, fig. 2: *C. wilsoni*, fig. 3: *C. stejnegeri*, fig. 4.
- Oreomyza perkinsi*, n. sp., Hawaii; id. t. c. p. 129.
- Loxops coccinea*, figured; id. t. c. pl. lxiii, figs. 1-4: *L. ochracea*, pl. lxiv: *L. rufa*, pl. lxv: *L. cæruleirostris*, pl. lxvi: *L. wolstenholmei*=*L. rufa* (Bloxam); id. t. c. p. 177.
- Pseudonestor xanthophrys*, figured; id. t. c. p. lxvii.
- Telespiza flavissima*=*T. cantans*; id. t. c. p. 199.
- Rhodacanthis palmeri*, figured; id. t. c. pl. lxviii: *R. flaviceps*, pl. lxix.

## Family CÆREBIDÆ.

- Dacnis berlepschi*, n. sp., N.W. Ecuador; HARTERT, Bull. B. O. C. xi, p. 37.

## Family TANAGRIDÆ.

- Calliste emiliae*, n. sp., Buenaventura, U. S. Colombia; DALMAS, Bull. B. O. C. xi, p. 35: *C. johannæ*, n. sp., Buenaventura, Colombia; id. t. c. p. 36: from N. Ecuador (Paramba); HARTERT, t. c. p. 40.
- Tanagra berlepschi*, n. sp., Tobago; DALMAS, Mem. Soc. zool. France xiii, pp. 136 & 137.
- Buarremon simonsi*, n. sp., Loja, Ecuador, *B. pallidiceps*, n. sp., Oña, Ecuador; SHARPE, Bull. B. O. C. xi, p. 2.
- Buarremon assimilis*, young in first plumage described; ALLEN, Bull. Amer. Mus. xiii, p. 167.

## Family PLOCEIDÆ.

- Ploceidæ*, notes on; FINN, J. Asiat. Soc. Bengal (2) lxviii, pp. 250-257.
- Penthetria psammacromia*, n. sp., Ukinga, N.E. of Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 39.
- Lagonosticta congica*, in Abyssinia; GRANT, Ibis 1900, p. 127.
- Sporæginthus margaritæ*, figured; id. t. c. pl. iii, fig. 1=*Estrela ochrogaster* Salvad.; id. t. c. p. 304 note; SALVADORI, t. c. p. 399.
- Poephila heeki*, n. sp., Australia; HEINROTH, Ornith. Monber. viii, pp. 22 & 23: id. J. Ornith. 1900, p. 248: *P. nigrotecta*, nest and eggs described; LE SOUËF, Ibis 1900, p. 461: *P. acuticauda*, figured; SETH-SMITH, Avicult. Mag. vi, pp. 257-259, pl. iv: *P. personata*, figured; PHILLIPPS, Avicult. Mag. vi, pp. 259-262, pl. iv.
- Munia malacca*, note on the interbreeding; FINN, Avicult. Mag. vi, pp. 182 & 183.



- Erythrura*, notes on the genus; HARTERT, Nov. Zool. vii, pp. 6 & 7:  
*E. trichroa woodfordi*, n. subsp., Solomon Is.; id. t. c. p. 7: *E. trichroa papuana*, n. subsp., New Guinea; id. t. c. p. 7.  
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# IV. REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER, F.R.S.

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*Brazil.* On a collection of Snakes from Lagoa Santa: A. S. JENSEN, Vid. Medd. 1900, pp. 99-111, figg. On a few Reptiles and Batrachians from the vicinity of São Paulo: SCHNEE, Zool. Anz. xxiii, pp. 461-464, figg.

## PAPUASIA.

*New Guinea.* On a collection of Reptiles and Batrachians from German New Guinea: E. LÖNNBERG, Ann. Nat. Hist. (7) vi, pp. 574-582.

*Bismarck Archipelago.* An account of the Reptiles and Batrachians by F. WERNER, Mt. Mus. Berlin i, 4, 132 pp., figg.

## FOSSIL FAUNÆ.

*Wealden and Purbeck of England, France, and Belgium.* E. VAN DEN BROECK, Mem. Soc. Belge Geol. 1900, pp. 39-112 comments on the affinities of the various Reptiles from these beds and gives lists of the species with an indication of their distribution.

*Jurassic of France.* On Reptilian remains from Lot-et-Garonne and Indre: SAUVAGE, Bull. Soc. geol. France xxviii, pp. 496-504, pl. ix. The same author, C.R. Ass. Franc. xxviii, 11, pp. 416-419, gives a list of Reptiles hitherto found in the Upper Jurassic of the Boulonnais.

*Mayence basin (Miocene).* On the Chelonian remains: A. v. REINACH, Abh. Senckenb. Ges. xxviii, pp. 1-135, pls. i-xliv.

*Trias of Germany and Bohemia.* W. PABST, Zeitschr. Deutsch. geol. Ges. lii, pp. 48-63, gives a list of the "Ichnites" of the Rothliegende, with an attempt at classifying these impressions.

## III. REFERENCES ARRANGED SYSTEMATICALLY.

## REPTILIA AND BATRACHIA.

- F. K. STUDNÍČKA, Verh. Anat. Ges. 1900, pp. 44-52, figg., has remarks on the parietal organs of the brain of Reptiles and Batrachians.
- J. T. CUNNINGHAM, Sexual Dimorphism, pp. 165-177, figg., makes some remarks on the secondary sexual characters of Reptiles and Batrachians.
- L. G. ANDERSSON, Bih. Svenska Ak. xxvi, iv, no. 1, catalogues the Linnean type specimens of Lizards, Chelonians, and Batrachians in the Stockholm Museum.

## REPTILIA.

- M. FÜRBRINGER, Jena. Zeitschr. xxxiv, pp. 215-718, figg., pls. xiii-xvii, brings out a memoir on the pectoral arch of Reptiles, followed by a new scheme of classification. The class is divided into 10 principal groups of which the Squamata are regarded as the nearest to the hypothetical ancestral group which connected them with some form of early Selachians:—I. STREPOSTYLICA (LACERTILIA and OPHIDIA). II. RHYNCHOCEPHALIA, ACROSAURIA, MICROSAURIA. III. ICHTHYOPTERYGIA. IV. CHELONIA. V. SAUROPTERYGIA. VI. MESOSAURIA. VII. THEROMORPHA. VIII. CROCODYLIA. IX. DINOSAURIA. X. PATAGIOSAURIA (PTEROSAURIA).
- H. F. OSBORN, Amer. Natural. xxxiv, pp. 1-7, figg., remarks on the intercentra and hypapophyses in the cervical region of Mosasaurs, Lizards, and *Sphenodon*, and, t. c. p. 944, notices and figures various types of Reptilian tripartite occipital condyle.
- A. BANCHI, Monit. Zool. ital. xi, pp. 231-243, figg., remarks on an additional bone, named by him parafibula, in the hind limb of various Reptiles.
- G. WILSON, Tr. R. Soc. Edinb. xxxix, pp. 613-621, 2 pls., has a paper on the development of the Müllerian ducts of Reptiles (*Crocodylus*, *Chelone*, *Lacerta*).
- SCHNEE, Zool. Garten xli, pp. 219-222, 315-317, remarks on supposed cases of mimicry among Snakes and South American Chelonians.

## SQUAMATA.

- MARIE LOYEZ, C.R. Ac. Sci. cxxx, pp. 48-50, investigates the constitution of the ovarian follicle in Lizards and Snakes.

## LACERTILIA.

- V. SIXTA, Zeitschr. Morphol. ii, pp. 323-364, figg., compares the skulls of Lizards (*Varanus*, *Lacerta*) with those of Monotremes. Also Zool. Anz. xxiii, pp. 213-229, figg.
- E. GAUPP, Anat. Hefte, Arb. xv, pp. 435-595, figg., pls. xlii-xlvii, gives an account of the chondrocranium of *Lacerta agilis*.

- E. FISCHER, Arch. mikr. Anat. lv, pp. 441-478, pls. xxii-xxiv, studies the structure of the nasal cavity and the lachrymal duct in Amphisbænids.
- K. PETER, t. c. pp. 582-616, pl. xxxiii, describes the development of the olfactory pit in *Lacerta*.
- A. HAASE, Arch. Naturg. lxvi, pp. 321-345, pls. xiii & xiv, investigates the structure and development of the digital expansions of the *Geckonidæ*.
- A. N. SEWERTZOFF, Anat. Anz. xviii, pp. 33-40, figg., has a preliminary communication on the development of the skull of *Tarentola mauritanica*.
- K. STADERINI, Atti Acc. Gioen. (4) xiii, no. xii, investigates the development of the head of *Chalcides ocellatus*.
- A. PRENANT, Bull. Soc. Nancy (3) i, pp. 178-181, remarks on the cephalic cavities in the embryos of various Lacertilia.
- G. VALENTI, Rend. Acc. Bologna (2) iii, 1899, pp. 113-116, has a preliminary communication on the first stages in the development of the musculature of the limbs in *Chalcides ocellatus*.
- E. ORRÛ, Boll. R. Acc. Med. Roma xxv, pp. 303-318, 2 pls. (1899), and Monit. Zool. ital. xi, pp. 119-124, pl. vi, deals with the development of the pancreas and liver in *Chalcides ocellatus*.
- A. NICOLAS, Arch. anat. micr. iii, pp. 457-489, pl. xx, investigates the fecundation of the ovum in *Anguis fragilis*.
- On the earliest use of the name *Sauria*: T. GILL, Science (2) xii, p. 730.

## GECKONIDÆ.

- Teratoscincus microlepis*, Nik., and *bedriagai*, Nik., described by NIKOLSKI, Ann. Mus. St. Petersb. 1899, pp. 376 & 378.
- Stenodactylus lumsdenii*, Blgr. Note by NIKOLSKI, t. c. p. 388.
- Tropicolotes nattereri*, sp. n., STEINDACHNER, Denk. Ak. Wien lxix, p. 326, pl. i, fig. 2, Gulf of Akaba.
- Bunopus tuberculatus*, Blanf. Note by NIKOLSKI, t. c. p. 387.
- Gymnodactylus sagittifer*, p. 379, *kirmanensis*, p. 381, *agamuroides*, p. 384, pl. xx, fig. 1, and *zarudnyi*, p. 385, pl. xx, fig. 2, spp. nn., NIKOLSKI, t. c., Persia; *G. louisiadensis*, De Vis, redescribed by LÖNNBERG, Ann. Nat. Hist. (7) vi, p. 575.
- Gonatodes africanus*, Werner. Note by TORNIER, Zool. Jahrb. Syst. xiii, p. 584.
- Pristurus rupestris*, Blanf. Note by STEINDACHNER, Denk. Ak. Wien lxix, p. 327.
- Phyllodactylus stumpffii*, Bttgr., and *pictus*, Ptrs. Notes by MOCQUARD, Bull. Soc. Philom. (9) ii, pp. 101 & 103; *P. brevipes* and *bastardi*, spp. nn., id. ibid. pp. 99 & 101, pl. ii, figg. 5 & 6, Madagascar.
- Diplodactylus wolterstorffi*, sp. n., TORNIER, Zool. Jahrb. Syst. xiii, p. 584, fig., Tanga, German E. Africa.
- Gehyra butleri*, sp. n., BOULENGER, J. Bombay Soc. xiii, p. 333, pl. —, fig. 1, Selangor; *G. larutensis*, sp. n., id. Ann. Nat. Hist. (7) vi, p. 188, Perak.
- Lygodactylus verticillatus*, Mocq. Note by MOCQUARD, Bull. Soc. Philom. (9) ii, p. 104.
- Lepidodactylus harterti*, sp. n., WERNER, Zool. Anz. xxiii, p. 196, Malacca.
- Gecko rhacophorus*, Blgr., figured by HANITSCH, J. Straits Asiat. Soc. xxxiv, pl. 1, fig. 1; *G. listeri*, Blgr., figured by BOULENGER, Mon. Christmas Id., pl. vii, fig. 1.
- Sphærodactylus buergeri*, sp. n., WERNER, Verh. Ges. Wien I, p. 264, Trinidad.

## UROPLATIDÆ.

The name *GECKO-CHAMÆLEONTES* is proposed for this group of Lizards which is regarded as of Subordinal rank: FÜRBRINGER, Jena. Zeitschr. xxxiv, p. 610.

*Uroplates fimbriatus*, Schn. Note on its arboreal habits: MOCQUARD, Bull. Soc. Philom. (9) ii, p. 104.

## AGAMIDÆ.

*Draco*, L. Remarks on the specimens preserved in the Dresden Museum: WANDOLLECK, Abh. Mus. Dresden ix, no. 3; *D. rizali*, sp. n., id. ibid. p. 15, pl. —, figg. 6 & 17, Mindanao; *D. whiteheadi*, sp. n., BOULENGER, P. Z. S. 1899, p. 956, pl. lxvi, fig. 1, Hainan; *D. punctatus* and *formosus*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, pp. 189 & 190, Perak.

*Gonyocephalus beyschlagi*, Bttgr. Note by WERNER, Zool. Jahrb. Syst. xiii, p. 484.

*Dendragama boulengeri*, Doria, redescribed and figured by WERNER, t. c. p. 484, pl. xxxi, fig. 2.

*Aphaniotis floweri*, sp. n., WERNER, t. c. p. 486, Singapore (?).

*Acanthosaura hainanensis*, sp. n., BOULENGER, P. Z. S. 1899, p. 957, pl. lxvi, fig. 2, Hainan.

*Agama rudrata*, Oliv., recorded from Transcaucasia by NIKOLSKI, Ann. Mus. St. Petersb. 1899, p. 451; *A. kirmanensis*, sp. n., NIKOLSKI, Ann. Mus. St. Petersb. 1899, p. 389, Kirman, Persia.

*Phrynocephalus spiniventris*, Nik., referred as a variety to *P. maculatus*, And., by NIKOLSKI, t. c. p. 392.

*Uromastix ornatus*, Heyden. Described and figured by STEINDACHNER, Denk. Ak. Wien lxix, p. 328, pl. i, fig. 1.

## IGUANIDÆ.

*Anolis agassizi*, p. 161, pl. —, Malpelo Id., Pacific Ocean, off Colombia, and *townsendi*, p. 163, Cocos Id., Pacific Ocean, off Costa Rica, spp. nn., STEJNEGER, Bull. Mus. Harvard xxxvi.

*Basiliscus gutturalis*, Cope. Note by McLAIN, Contrib. Neotrop. Herpetol. p. 1 (1899).

*Hoplorus grandidieri*, sp. n., MOCQUARD, Bull. Soc. Philom. (9) ii, p. 105, Madagascar.

*Stenocercus melanopygus* and *chrysopygus*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, pp. 182 & 183, Andes of Peru.

*Tropidurus thomasi*, sp. n., BOULENGER, t. c. p. 184, Coast of Peru.

*Sceloporus graciosus*, B. & G., and *occidentalis*, B. & G. Notes by McLAIN, Critic. Notes Coll. W. Coast U.S., p. 3 (1899).

## ANGUIDÆ.

*Ophisaurus apus*, Pall. Notes on the habits by G. SCHNEIDER, Zool. Garten xli, p. 117; *O. ventralis compressus*, subsp. n., COPE, Rep. U. S. Mus. f. 1898, p. 501, fig., South Carolina.

*Diploglossus bakeri*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 193, Jamaica.



## HELODERMATIDÆ.

- J. VAN DENBURGH & O. B. WIGHT, Amer. J. Physiol. iv, pp. 209-238, have investigated the physiological action of the poison of *Heloderma suspectum*, Cope, the effects of which they find differ in no important respect from those of various Snake venoms.

## VARANIDÆ.

- Varanus hofmanni*, Roger (foss.). Vertebra figured by ROGER, Ber. Ver. Augsburg xxxiv, pl. iii, figg. 12-14.

## TEIIDÆ.

- Cnemidophorus stejnegeri*, Van Denb. = *C. undulatus*, Hallow.: McLAIN, Critic. Notes Coll. W. Coast U.S. p. 9 (1899); *C. tessellatus æthiops*, subsp. n., COPE, Rep. U. S. Mus. f. 1898, p. 582, Sonora.  
*Neusticurus rudis*, sp. n., BOULENGER, Tr. Linn. Soc. London (2) viii, p. 53, pl. v, fig. 1, Mt. Roraima, Brit. Guiana.  
*Prionodactylus leucostictus*, sp. n., BOULENGER, t. c. p. 54, pl. v, fig. 2, Mt. Roraima, Brit. Guiana.  
*Anadia bogotensis*, Ptrs. Note by WERNER, Verh. Ges. Wien l, p. 267.  
*Oreosaurus striatus*, Ptrs. Note by WERNER, l. c.  
*Proctoporus ventrimaculatus*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 185, Andes of Peru.  
*Tretioscincus bifasciatus*, A. Dum., redescribed by WERNER, t. c. p. 268.

## LACERTIDÆ.

- Poromera fordi*, Hallow. Noticed and figured by BOULENGER, P. Z. S. 1900, p. 449, pl. xxxi, fig. 1.  
*Lacerta agilis*, Linn., and *viridis*, Laur. On Dalmatian specimens: KOLOMBATOVIĆ, Druge Zool. Vij. Dalm. pp. 20 & 21; *L. viridis*, Laur. On its habits and reproduction: R. ROLLINAT, Mem. Soc. zool. France xiii, p. 5; *L. ocellata*, Daud. On its distribution in France: P. MARTY, Feuille Natural. xxxi, p. 27.  
*Nucras boulengeri*, sp. n., O. NEUMANN, Ann. Nat. Hist. (7) v, p. 56, Usoga, Brit. E. Africa.  
*Gastropholis lutzei*, sp. n., TORNIER, Zool. Jahrb. Syst. xiii, p. 591, fig., Tanga, German E. Africa.  
*Latastia longicaudata*, Reuss, and *neumannii*, Matschie. Notes by STEINDACHNER, Denk. Ak. Wien lxi, pp. 329 & 330.  
*Eremias nigrocellata*, Nik., referred as a variety to *E. intermedia*, Strauch: NIKOLSKI, Ann. Mus. St. Petersb. 1899, p. 399.  
*Scapteira persica*, sp. n., NIKOLSKI, t. c. p. 395, pl. xx, fig. 3, Persia.

## GERRHOSAURIDÆ.

- Gerrhosaurus nigrolineatus*, Hallow. = *G. flavigularis*, Wgm.: TORNIER, Zool. Jahrb. Syst. xiii, p. 593.  
*Zonosaurus karstenii*, Grand. Note by MOCQUARD, Bull. Soc. Philom. (9) ii, p. 107; *Z. longicaudatus*, sp. n., id. ibid. p. 106, Madagascar.

## SCINCIDÆ.

- Trachysaurus rugosus*, Gray. Notes on the habits: SCHNEE, Zool. Garten xli, p. 17.
- Mabuia quinquecarinata*, Werner. Note by WERNER, Zool. Jahrb. Syst. xiii, p. 487; *M. isseli*, Ptrs. = *M. varia*, Ptrs.: TORNIER, Zool. Jahrb. Syst. xiii, p. 596, fig.; *M. batesi*, sp. n., BOULENGER, P. Z. S. 1900, p. 449, pl. xxxi, fig. 2, Gaboon.
- Lygosoma nativitatis*, Blgr., figured by BOULENGER, Mon. Christmas Id. pl. vii, fig. 2; *L. kilimensis*, Stejneger. Note by TORNIER, Zool. Jahrb. Syst. xiii, p. 601; *Sepacontias modestus*, Gthr. = *L. sundevalli*, Smith: TORNIER, t. c. p. 599, fig.; *L. bampfylldii*, E. Bartlett. Note by BOULENGER, Ann. Nat. Hist. (7) vi, p. 192. The same species, apparently, described and figured as *L. (Riopa) schneideri*, sp. n., WERNER, Zool. Jahrb. Syst. xiii, p. 487, pl. xxxi, fig. 1, Sumatra; *L. shelfordi*, sp. n., BOULENGER, P. Z. S. 1900, p. 182, pl. xiv, fig. 1, Sarawak; *L. larutense*, sp. n., BOULENGER, Ann. Nat. Hist. (7) v p. 306, Perak; *L. præsigne* and *stellatum*, spp. nn., id. op. cit. vi, pp. 191 & 192, Perak; *L. clathrotis*, sp. n., id. t. c. p. 194, Brit. E. Africa; *L. surdum*, p. 333, pl. —, fig. 2, Selangor, and *scotophilum*, p. 335, Batu caves, Selangor, spp. nn., BOULENGER, J. Bombay Soc. xiii.
- Ablepharus egeriae*, Blgr., figured by BOULENGER, Mon. Christmas Id. pl. vii, fig. 3.
- Eumeces skiltonianus*, B. & G. Note by McLAIN, Critic. Notes Coll. W. Coast U.S. p. 10 (1899); *E. zarudnyi*, sp. n., NIKOLSKI, Ann. Mus. St. Petersb. 1899, p. 399, pl. xx, fig. 4, Persia.
- Chalcides ocellatus*, Forsk. Note by STEINDACHNER, Denk. Ak. Wien lxix, p. 330; *C. ocellatus*, var. n. *occidentalis*, id. ibid. p. 331, Canary Ids.
- Melanoseps ater*, Gthr., var. n. *longicauda*, TORNIER, Zool. Jahrb. Syst. xiii, p. 602, German E. Africa.

## OPHIOPSISEPIDÆ.

This family is established by JENSEN, Vid. Medd. 1900, p. 325, for *Ophiopsiseps nasutus*, Bocage, which is described and figured, p. 317, pl. iii.

## RHIPTOGLOSSA.

- P. RAMON Y CAJAL, Act. Soc. Espan. 1900, pp. 242–251, has made experiments on the changes of colour in Chameleons.
- On the colour-changes in the Chameleon: F. W. GAMBLE, Tr. Manchester Micr. Soc. 1899, pp. 93–96.
- Chameleon vulgaris*, Daud., var. n. *musæ*, STEINDACHNER, Denk. Ak. Wien lxix, p. 331, Ain Musa, Suez; *C. calcarifer*, Ptrs., noticed and figured, id. ibid. p. 332, pl. ii; *C. verrucosus*, Cuv., *melanocephalus*, Gray, and *lateralis*, Gray. Notes by MOCQUARD, Bull. Soc. Philom. (9) ii, pp. 95 & 96; *C. lævigatus*, Gray, redescribed and figured by TORNIER, Zool. Jahrb. Syst. xiii, p. 603, fig.; *C. parvilobus*, Blgr. = *C. roperi*, Blgr. = *C. dilepis*, Leach, id. ibid. p. 606; *C. fischeri*, Reichen. Notes by TORNIER, t. c. p. 611; *C. tempeli*, Tornier, var. n. *wolffi*, id. t. c. p. 613, fig., German East Africa; *C. filleborni*, sp. n., id. t. c. p. 614, fig., German E. Africa; *C. pfefferi*, sp. n., TORNIER, Zool. Anz. xxiii, p. 21, fig., Cameroen; *C. grandidieri* and *fallax*, spp. nn., MOCQUARD, t. c. p. 96, pl. ii, figg. 1 & 2, Madagascar.
- Brookesia dentata*, sp. n., MOCQUARD, t. c. p. 98, pl. ii, fig. 4, Madagascar.

## PYTHONOMORPHA.

*Mosasaurus maximus*, Cope. Type specimen described and figured by WHITFIELD, Bull. Amer. Mus. xiii, p. 25, figg.

## OPHIDIA.

- L. KATHARINER, Zool. Jahrb. Syst. xiii, pp. 415-442, figg., pls. xxvii & xxviii, deals with the modifications of the nasal organ in Snakes adapted to aquatic life.
- G. S. WEST, Quart. J. Micr. Sci. xliii, pp. 49-59, pl. iv, investigates the structure of the loreal sensory pit of the *Crotalinae*.
- H. MARTIN, C.R. Ass. Franc. xxviii, 11, pp. 522-526, pl. v, has a paper on the development of the poison-apparatus of *Vipera aspis*.
- E. LAGUESSE, C.R. Soc. Biol. lii, pp. 800 & 801, has remarks on the pancreas of Snakes.
- E. GLAS, SB. Ak. Wien cix, iii, pp. 265-297, 3 pls., investigates the development of the spleen in *Tropidonotus natrix*.
- G. WETZEL, Anat. Anz. xviii, pp. 425-440, figg., reports on abnormal (duplex) eggs of *Tropidonotus natrix*.
- L. KATHARINER, Biol. Centrbl. xx, pp. 45-53, figg., writes on the mechanism of the bite of Viperine Snakes.
- J. PELLEGRIN, Bull. Soc. Philom. (9) ii, pp. 112-116, records his observations on the length of the life and the loss of weight in starving Snakes.
- F. WALL & G. H. EVANS have notes on Burmese Snakes. J. Bombay Soc. xiii, pp. 343-354.

## TYPHLOPIDÆ.

*Typhlops nigroalbus*, D. & B. = *T. muelleri*, Schleg., WERNER, Zool. Jahrb. Syst. xiii, p. 488; *T. mutilatus*, sp. n., WERNER, Zool. Anz. xxiii, p. 196, fig., Malacca; *T. willeyi*, sp. n., BOULENGER, Willey's Zool. Results v, p. 603, fig., Lifu, Loyalty Ids.

## BOIDÆ.

- F. WERNER, Zool. Garten xli, pp. 233-243, 274-287, writes on the habits and treatment of Boid Snakes in captivity.
- Python molurus*, L. Recorded from Pegu, Burma, by WALL & EVANS, J. Bombay Soc. xiii, p. 190.
- Chondropython viridis*, Schleg. Note by LÖNNBERG, Ann. Nat. Hist. (7) vi, p. 577.

## COLUBRIDÆ.

*Aglypha*.

- Stoliczkaia borneensis*, Blgr., figured by HANITSCH, J. Straits Asiat. Soc. xxxiv, pl. i, fig. 2.
- Tropidonotus*, Kuhl. Remarks on the Californian species referred to *Thamnophis*, Fitz., McLAIN, Critic. Notes Coll. W. Coast U. S. p. 11 (1899); *T. tessellatus*, Laur., var. *flavescens*, Werner. Notes by LEHRs, Natur u. Haus viii, pp. 217 & 244, fig; *T. piscator*, Schn. On the eggs: F. WALL, J. Bombay Soc. xiii, p. 373.
- Thamnophis stejnegeri*, sp. n., McLAIN, Contrib. Neotrop. Herpetol. p. 4, pl. — (1899), Salamanca, Guanajuato, Mexico.

- Lycodon fasciatus*, And. Note by WALL & EVANS, J. Bombay Soc. xiii, p. 372; *L. butleri*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 193, and J. Bombay Soc. xiii, p. 336, Perak.
- Lepturophis*, g. n., allied to *Lycodon*, for *L. borneensis*, sp. n., BOULENGER, P. Z. S. 1900, p. 183, pl. xv, Sarawak.
- Zamenis mucosus*, L. On the hatching of the eggs: WALL & EVANS, t. c. p. 189; *Z. dahlui*, Fitz. On its habits in captivity: P. SCHMIDT, Zool. Garten xli, p. 217; *Z. rogersi*, And., and *rhodorhachis*, Jan. Notes by STEINDACHNER, Denk. Ak. Wien lxix, p. 333.
- Xenelaphis ellipsifer*, sp. n., BOULENGER, P. Z. S. 1900, p. 184, pl. xvi, Sarawak.
- Philothamnus angolensis*, Bocage, is regarded as a variety of *P. irregularis*, Leach, by BETHENCOURT-FERREIRA, J. Sci. Lisb. (2) vi, p. 51.
- Coluber quatuorlineatus*, Lacép. On Dalmatian specimens: KOLOMBATOVIĆ, Druge Zool. Vij. Dalm. p. 23.
- Rhadinea lineata*, sp. n., JENSEN, Vid. Medd. 1900, p. 105, fig., Lagoa Santa, Brazil.
- Grayia smythii*, Leach. Note by BOULENGER, P. Z. S. 1900, p. 453.
- Ablabes hamptoni*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 409, Burma.
- Contia satunini*, sp. n., NIKOLSKI, Annuaire Mus. St. Petersb. iv, p. 449, Elizabethpol, Transcaucasia.
- Dirosema collare*, sp. n., WERNER, Zool. Anz. xxiii, p. 197, fig., Mexico.
- Atractus badius*, D. & B. and *crassicaudatus*, D. & B. Notes by WERNER, Verh. Ges. Wien l, p. 270.
- Oreocalamus hanitschi*, Blgr., figured by HANITSCH, J. Straits Asiat. Soc. xxxiv, pl. i, fig. 3.

### *Opisthoglypha.*

- As a result of his experiments on the poison of *Cælopeltes*, C. PHISALIX is inclined to regard the opisthoglyphous Snakes as intermediate between the Aglyphous Colubrids and the Proteroglyphous. Bull. Mus. Paris 1900, p. 38.
- Hypsirhina punctata*, Gray, redescribed by WERNER, Zool. Jahrb. Syst. xiii, p. 490.
- Dipsadomorphus cyaneus*, D. & B. On a specimen from Rangoon, Burma: WALL & EVANS, J. Bombay Soc. xiii, p. 188.
- Dipsadoboa unicolor*, Gthr. Note by BOULENGER, P. Z. S. 1900, p. 454.
- Oxyrhopus undulatus*, sp. n., JENSEN, Vid. Medd. 1900, p. 106, fig., Lagoa Santa, Brazil.
- Philodryas campicola*, sp. n., JENSEN, t. c. p. 108, fig., Lagoa Santa, Brazil; *P. laticeps*, sp. n., WERNER, Zool. Anz. xxiii, p. 198, Sta Catharina, Brazil; *P. simonsii*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 185, Andes of Peru.
- Cælopeltes monspessulana*, Herm. Experiments on the poison: PHISALIX, Bull. Mus. Paris 1900, p. 33. E. TATON-BAULMONT, Feuille Natural. xxx, p. 85, describes the effects upon himself of the bite of this snake.
- Atractaspis hildebrandti*, Ptrs. = *Culamelaps unicolor*, Rhdt., TORNIER, Zool. Jahrb. Syst. xiv, p. 85.

### *Proteroglypha.*

- Hydrophis rhombifer*, sp. n., BOULENGER, Ann. Nat. Hist. (7) v, p. 306, Perak Coast.
- Distira wrayi*, sp. n., BOULENGER, t. c. p. 307, Perak Coast; *D. sarawacensis*, sp. n., id., P. Z. S. 1900, p. 184, pl. xiv, fig. 2, Sarawak coast.



- Pseudapistocalamus*, g. n., near *Aapistocalamus*, Blgr., and *Pseudelaps*, D. & B., for *P. nymani*, sp. n., LÖNNBERG, Ann. Nat. Hist. (7) vi, p. 578, New Guinea.
- Naia guentheri*, Blgr. = *N. goldii*, Blgr., BOULENGER, P. Z. S. 1900, p. 455.
- Boulengerina annulata*, Buchh. & Peters, figured by BOULENGER, t. c. pl. xxxii.
- Doliophis intestinalis*, Laur., var. n. *vertebralis*, WERNER, Zool. Jahrb. Syst. xiii, p. 491, Sumatra.
- Elaps marcegravi*, Wied, *lemniscatus*, L., and *frontalis*, D. & B. Notes by SEURAT, Bull. Mus. Paris 1900, pp. 230 & 231.

## AMBLYCEPHALIDÆ.

- Amblycephalus nuchalis*, sp. n., BOULENGER, P. Z. S. 1900, p. 185, pl. xvii, fig. 1, Sarawak; *A. vertebralis*, sp. n., BOULENGER, Ann. Nat. Hist. (7) v, p. 307, Perak.

## VIPERIDÆ.

- G. LEIGHTON, Zoologist (4) iv, pp. 393-396, figg., investigates the capacity of the gullet in *Vipera berus* with a view to testing the possibility of its sheltering its young in that region.
- Vipera ursinii*, Bp. On Dalmatian specimens: KOLOMBATOVIĆ, Druge Zool. Vj. Dalm. p. 24; *V. russellii*, Daud. On the shields surrounding the nostril: WALL & EVANS, J. Bombay Soc. xiii, p. 353, fig.
- Echis carinatus*, Schn. On its parturition: F. WALL, J. Bombay Soc. xiii, p. 184; *E. carinatus*, Schn., and *E. coloratus*, Gthr., compared and the latter recorded from Egypt: ANDERSON, Ann. Nat. Hist. (7) vi, p. 419, figg.
- Ancistrodon blomhoffi*, Boie. On its coloration in life: SCHNEE, Zool. Garten xli, p. 395.

## ORNITHOSAURIA.

- E. VAN DEN BROECK, Mem. Soc. Belge Geol. 1900, pp. 105-107, remarks on the Ornithosaurians of the Weald and Purbeck.

## DINOSAURIA.

- H. F. OSBORN, Amer. Natural. xxxiv, pp. 777-799, figg., reconsiders the evidence for a derivation of the birds from the Dinosaurs.
- E. VAN DEN BROECK, Mem. Soc. Belge Geol. 1900, pp. 81-104, compares the Dinosaurs of Bernissart with those hitherto recorded from the Weald and Purbeck of England and the North of France.
- Limnosaurus transsylvanicus*, g. and sp. nn., for remains of skulls apparently related to *Iguanodon* and *Hadrosaurus*, F. v. NOPCSA, Denk. Ak. Wien lxviii, p. 555, 6 pls., Upper Cretaceous of Szentgyeterfalva, Hungary.
- Diplodocus*, Marsh. On the vertebral formula: W. J. HOLLAND, Science (2) xi, p. 816; J. B. HATCHER, op. cit. xii, p. 828.
- Zanclodon schützii*, sp. n., for a tooth from the Trias of Hall, Württemberg, E. FRAAS, Jaresh. Ver. Württemb. lvi, p. 510, figg.
- Dinosaurian teeth of the genera *Megalosaurus* and *Pelorosaurus* figured by SAUVAGE, Bull. Soc. geol. France xxviii, pl. ix.
- C. DEPÉRET, t. c. p. 530, and C.R. Ac. Sci. cxxx, p. 637, announces the discovery of remains of *Crataeomus*, Seeley, in the Upper Cretaceous of the Montagne Noire, near Narbonne, in the South of France.

# EMYDOSAURIA.

- E. VAN DEN BROECK, Mem. Soc. Belge Geol. 1900, pp. 107-112, remarks on the Crocodilians of the Weald and Purbeck.  
 E. A. GÖLDI, Zool. Anz. xxiii, pp. 149-151, remarks on the hoof-like expansions of the claws in *Alligator*-embryos.

# CHELONIA.

- G. R. WIELAND, Amer. J. Sci. (4) ix, pp. 413-423, figg., remarks on certain stages in the evolution of the humerus of marine Chelonians.  
 F. SIEBENROCK, SB. Ak. Wien cix, 1, pp. 441-448, pl. —, describes and figures the hyoid apparatus, larynx, and trachea of *Testudo calcarata*, Schn.  
 B. HALLER, Morphol. Jahrb. xxviii, pp. 252-346, pls. xv-xix, investigates the histological structure of the brain of *Emys*.  
 EMILY R. GREGORY, Zool. Jahrb. Anat. xiii, pp. 683-714, pls. xlv-l, has observations on the development of the excretory system in Chelonians.  
 SCHNEE, Zool. Garten xli, pp. 215-217, remarks on water-tortoises feeding on land.  
*Trionyx*, Geoffr. On the fossil species of the Mayence basin: A. v. REINACH, Abh. Senckenb. Ges. xxviii, p. 104, pls. xxxvii-xlii; *T. bouleengeri*, p. 104, pls. xxxvii & xxxviii, Oligocene of Alzey, *messelianus*, p. 118, pls. xli & xlii, Miocene (?) of Messel near Darmstadt, spp. nn. (foss.), id. *ibid.*; *T. preschenensis*, p. 40, pls. i & ii, fig. 1, and *aspidiformis*, p. 44, pl. ii, fig. 2, spp. nn. (foss.), LAUBE, Abh. Ver. Lotos ii, Brown Coal of Bohemia.  
*Sternotherus sinuatus*, Smith = *S. nigricans*, Donnd., TORNIER, Zool. Jahrb. Syst. xiii, p. 582.  
*Podocnemis egyptiaca*, sp. n. (foss.), C. W. ANDREWS, Geol. Mag. (2) Dec. iv, vii, p. 1, pl. i, Lower Miocene, Moghara, Egypt.  
*Platemys vernerii*, sp. n., SCHNEE, Zool. Anz. xxiii, p. 463, figg., S. Paulo, Brazil.  
*Plesiochelys vectensis*, sp. n. (foss.), HOOLEY, Geol. Mag. (2) Dec. iv, vii, p. 265, Wealden, Isle of Wight.  
*Chelydra argilliarum*, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 47, pl. ii, fig. 7, Brown Coal of Bohemia.  
*Bellia borneensis*, Gray. Note by WERNER, Zool. Jahrb. Syst. xiii, p. 481.  
*Brookia baileyi*, E. Bartl. On a very large specimen, with remarks on the synonymy: BOULENGER, P. Z. S. 1900, p. 661.  
*Promalacoclemmys*, g. n., near *Malacoclemmys*, Gray, for *P. bouleengeri*, sp. n. (foss.), A. v. REINACH, Abh. Senckenb. Ges. xxviii, p. 92, pl. xxx, Miocene of Hessler, near Biebrich.  
*Ocadia*, Gray. On the fossil species: A. v. REINACH, t. c. p. 95, pls. xxxi-xxxvi and xliii; *O. hessleriana*, sp. n. (foss.), id. *ibid.*, p. 95, pl. xxxi, Miocene of Hessler, near Biebrich.  
*Ptychogaster*, Pomel (foss.). Revision of the species by A. v. REINACH, t. c. p. 21, pls. vi-xxix; *P. lepsii*, p. 33, pls. xiv-xvi, Oligocene of Alzey, *erbstadtianus*, p. 55, Miocene of Erbstadt-Kaichen, *francofurtanus*, p. 56, pl. xx, Miocene of Frankfurt/M., *roemeri*, p. 58, pl. xxi, Miocene, Wiesbaden, *boettgeri*, p. 60, pls. xxii-xxvii, Miocene of Hessler near Biebrich, *kinkelini*, p. 76, pls. xxviii & xxix, Miocene of Hessler, spp. nn., id. *ibid.*  
*Testudo*, L. On the Roumanian species (*T. græca*, *ibera*, *marginata*): RAZNOSANU, Bull. Soc. Bucarest ix, p. 278, figg. L. VAILLANT, Bull.

- Mus. Paris, 1899, p. 354, has remarks concerning the history of the extinct gigantic Tortoise of Reunion, and A. A. FAUVEL, op. cit. 1900, p. 170, on that of Juan de Nove (Farquhar Id.); *T. indica*, Schneid. On the type specimen: VAILLANT, Arch. Mus. Paris (4) ii, p. 25, pl. viii; *T. microphytes*, Gthr. Note by VAILLANT, Bull. Mus. Paris 1900, p. 228; *T. polyphemus*, Daud. Notes on the habits by W. B. FLETCHER, P. Indiana Ac. 1899, p. 46; *T. zarudnyi*, Nik. Note by NIKOLSKI, Annuaire Mus. St. Petersb. iv, p. 375; *T. promarginata*, p. 7, pls. i-iv, and *ptychogastroides*, p. 19, pl. v, spp. nn. (foss.), A. v. REINACH, Abh. Senckenb. Ges. xxviii, Miocene, Mayence Basin.
- Archelon ischyros*, Wieland (foss.). On the skull and pelvis and the probable relationships: WIELAND, Amer. J. Sci. (4) ix, p. 237, figg., pl. ii; *A. marshii*, sp. n. (foss.), id. ibid., p. 248, Fort Pierre Cretaceous, Dakota.
- Protosphargis veronensis*, Capellini (foss.). Remarks by CAPELLINI, Rend. Acc. Bologna (2) ii, 1898, p. 97, pl. —.

## ICHTHYOSAURIA.

- F. BAUER, Anat. Anz. xviii, pp. 574-588, figg., has notes on the structure of the pectoral and pelvic girdles and of the skull of *Ichthyosaurus*.
- E. GEINITZ, N. Jahrb. Min. 1900, i, p. 63, fig., records some Ichthyosaurian vertebræ from the Upper Lias of Dobbertin, Mecklenburg.
- Ichthyosaurus australis*, McCoy (?). On a fragment of jaw from the Flinders R., Queensland: C. W. ANDREWS, P. Z. S. 1900, p. 660, fig.

## PLESIOSAURIA.

- Plesiosaurus shirleyensis*, sp. n., W. C. KNIGHT, Amer. J. Sci. (4) x, p. 115, fig., Jurassic, Rocky Mountains.
- Cimoliosaurus laramiensis*, sp. n., W. C. KNIGHT, t. c. p. 117, fig., Jurassic, Rocky Mountains.
- Stereosternum tumidum*, Cope. Specimen in the Dresden Museum described and figured by GEINITZ, Ann. Soc. geol. Belgique xxv bis, p. 37, pl. i.

## RHYNCHOCEPHALIA.

- H. SCHAUINSLAND, Arch. mikr. Anat. lvi, pp. 747-867, pls. xxxii-xxxiv, has a further contribution to the development of *Sphenodon punctatus*.
- G. B. HOWES & H. H. SWINNERTON, P. Z. S. 1900, pp. 516 & 517, give an abstract of their forthcoming Memoir on the development of the skeleton of *Sphenodon punctatus*.
- R. BURCKHARDT, Geol. Mag. (2) Dec. iv, vii, pp. 486-492, 529-535, figg., pl. xix, gives a description of the remains of *Hyperodapedon gordoni*, Huxley (foss.), and remarks on the affinities of the group of Rhynchocephalians to which it pertains, and which he thinks is connected in a direct line with the lowest forms.
- E. T. NEWTON, P. Geol. Ass. xvi, p. 496, fig., remarks on a bone from the Chalk of Cuxton, possibly a palatine or pterygoid of a Rhynchocephalian such as *Rhynchosaurus*.
- Hyperodapedon minor*, sp. n. (foss.), BURCKHARDT, t. c. p. 492, Trias, Scotland.

## ANOMODONTIA.

- Aristodesmus riitimeyeri*, Wiedersheim [see Zool. Rec. 1896]. Skeleton described and figured by SEELEY, Quart. J. Geol. Soc. lvi, p. 620, figg.
- Dicranozygoma leptoscelus*, g. and sp. nn., apparently Cynodontian, SEELEY, t. c. p. 646, pl. xxxvi, Trias, Cape Colony.
- Eurycarpus oweni*, Seeley. On some newly-discovered remains: SEELEY, t. c. p. 325, figg., pl. xxi.
- Ictidosuchus*, g. n., for *I. primævus*, sp. n., founded on the remains of a small Theriodont of a generalized type, from the Karoo Beds near Pearston: R. BROOM, Ann. Nat. Hist. (7) vi, p. 314, fig.

## BATRACHIA.

- A. SABATIER, C.R. Ac. Sci. cxxx, pp. 633-637, writes on the morphology of the pelvic girdle in Batrachians.
- P. SCHULZ, Arch. Physiol. 1900, pp. 1-8, figg., writes on the musculature of the stomach in Batrachians.
- H. M. BERNARD, Quart. J. Micr. Sci. xliii, pp. 23-47, pl. iii, investigates the structure of the retina in Batrachians.
- G. TORNIER, Zool. Anz. xxiii, pp. 233-256, figg., remarks on regenerated tails of Batrachians.
- F. RAFFAELE, Anat. Anz. xviii, pp. 337-344, figg., has a note on the genesis of the lateral nerve in Batrachian larvæ. Remarks by KOELLIKER, t. c. p. 511.
- V. ELLERMANN, Anat. Anz. xviii, pp. 182-189, figg., writes on the slime secretion in the oviduct of Batrachians.
- G. V. CIACCIO, Rend. Acc. Bologna (2) iii, 1899, pp. 95-105, pl. —, compares the spermatozoa of *Molge cristata* with those of *Rana esculenta*.
- R. WIEDERSHEIM, Biol. Centrbl. xx, pp. 304-316, 321, 333, reviews our knowledge of the modes of nursing in the class Batrachia.
- H. LEBRUN, Rev. Quart. Sci. (2) xviii, reviews our knowledge of the oviposition in the Batrachians of Belgium.
- On the earliest use of the name *Batrachia*: T. GILL, Science (2) xii, p. 730.

## ECAUDATA.

- M. BOUIN, Arch. Biol. xvii, pp. 201-383, pls. ix-xii, investigates the histogenesis of the female genital gland in *Rana temporaria*.
- M. BOUIN, Bibliog. anat. viii, pp. 53-59, 103-108, figg., has remarks on the genital glands in tadpoles of *Rana temporaria*.
- R. C. PUNNETT describes the genital glands and ducts in a hermaphrodite *Rana temporaria*. Ann. Nat. Hist. (7) vi, pp. 179 & 180, pl. ix.
- A. POLICARD, C.R. Soc. Biol. lii, pp. 846 & 847, has some remarks on Bidder's organ in the Toad.
- O. V. SRDÍŃKO, Anat. Anz. xviii, pp. 500-508, figg., writes on the structure and development of the suprarenal bodies in Tailless Batrachians.
- E. WARREN, Anat. Anz. xviii, pp. 122 & 123, fig, records some abnormalities in the blood-vessels of Frogs.
- T. W. SHORE, J. Anat. Physiol. norm. path. (2) xiv, pp. 398-402, fig, describes an unusual arrangement of the renal portal vein in *Rana temporaria*.



- A. E. SMIRNOW, *Anat. Hefte*, Arb. xiv, pp. 409-431, figg., pls. xvii & xviii, has a contribution to the morphology of the sympathetic ganglion-cells of the Frog.
- J. GAULE, *Arch. ges. Physiol.* lxxxiii, pp. 83-88, pl. iii, has investigated the sexual differences in the weight of the muscles in *Rana esculenta*.
- I. BROMAN, *Anat. Anz.* xvii, pp. 20-30, figg., and *Verh. Anat. Ges.* 1900, pp. 157-164, figg., writes on giant spermatozoa of *Bombinator igneus*, and *Anat. Anz.* xvii, pp. 129-145, figg., on the development and structure of the spermatozoa of this Batrachian.
- J. ARNOLD, *Anat. Anz.* xvii, pp. 517-519, remarks on the demonstration of the expansion of the nerve-terminations in the fungiform papillæ of the Frog's tongue.
- S. BAGLIONI, *Arch. Physiol.* 1900, Suppl. pp. 33-59, investigates the mechanism of respiration in the Frog.
- E. GODLEWSKI, JUN., *Bull. Ac. Cracovie* 1900, pp. 232-255, figg., has made experiments on the influence of oxygen on the development of the ovum of *Rana temporaria*.
- K. REUTER, *Anat. Hefte*, Arb. xiii, pp. 339-361, pls. xviii-xx, has investigated the development of the spiral gut of *Alytes obstetricans*, and, *op. cit.* xiv, pp. 433-446, pls. xix & xx, and xv, pp. 625-672, pls. lii-lvi, its regression.
- H. V. WILSON, *Anat. Anz.* xviii, pp. 209-239, & 384, figg., investigates the formation of the blastopore in the Frog egg.
- T. H. MORGAN, *Biol. Bull.* ii, pp. 111-119, figg., has made grafting experiments with embryos of Frogs.
- E. BATAILLON, *C.R. Ac. Sci.* cxxx, pp. 115-118, writes on experimental parthenogenetic segmentation of frog-ova.
- LILIAN V. SAMPSON, *Amer. Natural.* xxxiv, pp. 687-715, gives a summary of the unusual modes of breeding and development in Tailless Batrachians, with a very complete bibliographical index to the subject.
- MAUREL & LAGRIFFE, *C.R. Soc. Biol.* lii, pp. 217-219, have made experiments to ascertain the highest temperature that can be endured by frogs.
- M. LEVY, *Zool. Garten* xli, pp. 178-180, has further observations on the hibernation of Frogs under water.

## PHANEROGLOSSA.

### RANIDÆ.

*Rana cyanophlyctis*, Schn., var. n. *seistanica*, NIKOLSKI, *Annuaire Mus. St. Petersb.* iv, p. 406, Persia; *R. macrodon*, Kuhl, and *tigrina*, Daud. Tadpoles described and figured by S. FLOWER, *P. Z. S.* 1899, pp. 889 & 892, pl. lix, figg. 1 & 2; *R. esculenta*, var. *lessonæ*, Camer., recorded from the Tessin by FATIO, *Rev. Suisse Zool.* viii, p. 474; *R. latastii*, Blgr., recorded from the same part of Switzerland under the erroneous name of *R. græca*, Blgr.: *id. ibid.* p. 474 [Specimen identified as *R. latastii*.—REC.]; *R. temporaria*, L. Recorded from the Scilly Ids. by F. W. TERRY, *Zoologist* (4) iv, p. 383; *R. agilis*, Thom. On its distribution in Germany: WOLTERSTORFF, *Naturw. Wochenschr.* xv, p. 205; *R. forreri*, Blgr., and *pustulosa*, Blgr., figured by GÜNTHER, *Biol. Centr.-Amer.*, *Batr.*, pl. lx, fig. A, & lxi, fig. B; *R. æquiplicata*, Werner, described by BOULENGER, *P. Z. S.* 1900, p. 437; *R. novæ-britanniæ*, Werner, described and figured from Sumatra by WERNER, *Zool. Jahrb. Syst.* xiii, p. 493, pl. xxxii, fig. 3; *R. jerboa*, Gthr. Larva (undetermined) noticed and figured by M. WEBER, *Ann. Jard. Botan.*

- Buitenzorg, Suppl. ii, 1898, p. 10, fig.; *R. graminea*, sp. n., BOULENGER, P. Z. S. 1899, p. 958, pl. lxvii, fig. 1, Hainan; *R. pigra*, sp. n., MOCQUARD, Bull. Soc. Philom. (9) ii, p. 109, Madagascar; *R. omiltemana*, p. 200, pl. lxi, fig. A, Omilteme, Guerrero [= *R. halecina*, Kalm.—REC.], *bonaccana*, p. 201, pl. lx, fig. B, Id. of Bonacca, Yucatan [= *palmipes*, Spix.—REC.], *melanosoma*, p. 203, pl. lxiii, fig. B, Guatemala and Nicaragua [= *palmipes*, Spix.—REC.], and *godmani*, p. 204, pl. lxiii, fig. A, Costa Rica, spp. nn., GÜNTHER, op. cit.
- Staurois hainanensis*, sp. n., BOULENGER, P. Z. S. 1899, p. 958, pl. lxvii, fig. 2, Hainan.
- Scotobleps*, g. n., like *Rana*, but with a vertical pupil: BOULENGER, op. cit. 1900, p. 438; *S. gabonicus*, sp. n., id. ibid. p. 439, pl. xxviii, fig. 1, Gaboon.
- Petropedetes*, Reichenow. On the characters of the three species, and note on *P. (Tymppanoceros) newtoni*, Bocage, BOULENGER, t. c. p. 439.
- Phrynobatrachus auritus* and *latirostris*, spp. nn., BOULENGER, t. c. p. 440, pl. xxviii, figg. 2 & 3, Gaboon.
- Arthroleptis africana*, Hallow., redescribed by BOULENGER, t. c. p. 441; *A. inguinalis*, sp. n., id. ibid. p. 442, pl. xxvii, fig. 2, Gaboon.
- Gumposteonyx*, g. n., remarkable for the exposed ungual phalanges of the toes, for *G. batesi*, sp. n., BOULENGER, t. c. p. 442, pl. xxix, Gaboon.
- Trichobatrachus*, g. n., with villose dermal papillæ on the sides, for *T. robustus*, sp. n., BOULENGER, t. c. p. 443, pl. xxx, Gaboon. Remarks on its hair-like papillæ: GADOW, Anat. Anz. xviii, p. 588.
- Dilobates*, g. n., with nearly four toes and a vertical pupil: BOULENGER, t. c. p. 443; *D. platycephalus*, sp. n., id. ibid. p. 444, pl. xxvii, fig. 3, Gaboon.
- Rhacophorus leucomystax*, Gravh. Tadpoles figured by S. FLOWER, P. Z. S. 1899, pl. lix, fig. 3; *R. colletti*, Blgr., and *nigropalmatus*, Blgr., described and figured by WERNER, Zool. Jahrb. Syst. xiii, pp. 494 & 496, pl. xxxii, fig. 4, and pl. xxxiv, fig. 8; *R. reinwardti*, var. n. *lateralis*, id. ibid. p. 495, pl. xxxiii, fig. 6, Sumatra; *P. phyllopygus*, p. 494, pl. xxxii, fig. 5, and *pulchellus*, p. 495, pl. xxxiii, fig. 7, spp. nn., id. ibid., Sumatra; *R. oxycephalus*, sp. n., BOULENGER, P. Z. S. 1899, p. 959, pl. lxvii, fig. 3, Hainan; *R. shelfordi*, sp. n., id. op. cit. 1900, p. 185, pl. xviii, fig. 2, Sarawak.
- Chiromantis kachowskii*, sp. n., NIKOLSKI, Annuaire Mus. St. Petersb. v, p. 246, Abyssinia.
- Ixalus petersi*, sp. n., BOULENGER, P. Z. S. 1900, p. 185, pl. xvii, fig. 3, Sarawak; *I. larutensis* and *vermiculatus*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, p. 187, Perak.
- Rappia platyceps*, sp. n., BOULENGER, P. Z. S. 1900, p. 444, pl. xxvii, fig. 4, Gaboon.
- Hylambates brevirostris*, Werner. Note by BOULENGER, t. c. p. 445.

## DENDROBATIDÆ.

- Mantella aurantiaca*, sp. n., MOCQUARD, Bull. Soc. Philom. (9) ii, p. 110, Madagascar.
- Cardioglossa*, g. n., with large cordiform tongue, and without bony style to the sternum: BOULENGER, P. Z. S. 1900, p. 445; *C. gracilis*, sp. n., id. ibid. p. 446, fig., Gaboon.

## ENGYSTOMATIDÆ.

- Atelopus varius*, Stann. Varieties figured by GÜNTHER, Biol. Centr.-Amer., Batr. pl. lxii, figg. A-C.

- Oreophrynella quelchii*, Blgr., figured by BOULENGER, Tr. Linn. Soc. London (2) viii, pl. v, fig. 3; *O. macconnelli*, sp. n., id. ibid. p. 55, pl. v, fig. 4, Mt Roraima, Brit. Guiana.
- Calophrynus heterochirus*, sp. n., BOULENGER, P. Z. S. 1900, p. 186, pl. xvii, fig. 4, Sarawak.
- Microhyla ornata*, D. & B. Tadpole described and figured by S. FLOWER, P. Z. S. 1899, p. 902, pl. lx, fig. 1; *M. butleri* and *annectens*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, p. 188, Perak.
- Otophryne*, g. n., allied to *Hypopachus*, for *O. robusta*, sp. n., BOULENGER, Tr. Linn. Soc. London (2) viii, p. 55, pl. v, fig. 5, Mt Roraima, Brit. Guiana.
- Engystoma elegans*, Blgr., figured by GÜNTHER, Biol. Centr.-Amer., Batr. pl. lxii, fig. d.
- Glossostoma*, g. n., near *Engystoma*, for *G. aterrimum*, sp. n., GÜNTHER, op. cit. p. 210, pl. lxiv, fig. a, Costa Rica.

## DYSCOPHIDÆ.

- Dyscophus insularis*, Grand. Note by MOCQUARD, Bull. Soc. Philom. (9) ii, p. 111.

## CYSTIGNATHIDÆ.

- Hylodes polyptychus*, Cope, pl. lxvi, fig. c, *underwoodi*, Blgr., pl. lxvi, fig. d, and *rhodopis*, Cope, pl. lxvii, fig. c, figured by GÜNTHER, Biol. Centr.-Amer., Batr.; *H. melanostictus*, Cope, figured as *H. brocchii*, Blgr., by GÜNTHER, op. cit. pl. lxviii, figg. A & B; *H. plicatus*, p. 228, pl. lxvi, fig. b, Jalapa, *calcitrans*, p. 230, pl. lxvii, fig. b, Guerrero and Jalisco, *platyrhynchus*, p. 230, pl. lxvii, fig. A, Costa Rica, and *venustus*, p. 234, pl. lxvii, fig. c, Jalapa, spp. nn., id. ibid.; *H. marmoratus*, sp. n., BOULENGER, Tr. Linn. Soc. London (2) viii, p. 56, pl. v, fig. 6, Mt Roraima, Brit. Guiana.
- Liophyla guentheri*, Kef., pl. lxvi, fig. A, and *fleischmanni*, Bttgr., pl. lxiv, fig. B, figured by GÜNTHER, op. cit.; *L. pittieri*, p. 223, pl. lxv, fig. B, and *engytympanum*, p. 224, pl. lxv, fig. A [= *Hylodes melanostictus*, Cope.—REC.], spp. nn., id. ibid., Costa Rica.
- Syrhaphus omiltemanus*, sp. n., GÜNTHER, Biol. Centr.-Amer., Batr. p. 216, Omilteme, Guerrero.
- Paludicola simonsii*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 182, Andes of Peru.
- Tomodactylus*, g. n., differing from *Paludicola*, Wagl., in the presence of digital disks, for *T. amula*, sp. n., GÜNTHER, Biol. Centr.-Amer., Batr. p. 219, pl. lxiv, fig. c, Amula, Guerrero.

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- frons*, sp. n., BOULENGER, P. Z. S. 1900, p. 435, pl. xxvii, fig. 1, Gaboon.  
*Nectes subasper*, Tsch., figured by WERNER, Zool. Jahrb. Syst. xiii, pl. xxxv, fig. 10; *N. sumatranus*, sp. n., id. ibid. p. 497, pl. xxxv, fig. 9, Sumatra.

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## V. PISCES.

BY

G. A. BOULENGER, F.R.S.

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## II. GENERAL SUBJECT.

B. DEAN, Mem. N. York Ac. ii, p. 22, remarks on the primary groups of Fish-like vertebrates (*Chordata*). A new Class, *Arthrognathi*, is proposed to receive the *Arthrodira* of Smith Woodward and the *Anarthrodira*, a new sub-class for *Macropetalichthys*. The *Arthrognathi* are considered to be nearly related to the *Ostracophori* and widely remote from the *Dipnoi*.

J. GRAHAM KERR, P. Cambridge Soc. x, pp. 227–235, remarks on the hypotheses as to the origin of the paired limbs.

P. STÉPHAN, Bull. Sci. France Belgique xxxiii, pp. 281–423, pls. i–viii, studies the histological structure of the bony tissue of Fishes.

H. HOYER, Bull. Ac. Cracovie 1900, pp. 263–279, figg., has considerations on the morphology of the heart of Fishes.

B. RAWITZ, Arch. mikr. Anat. lvi, pp. 149–168, pl. vi, investigates the blood-corpuscles of Sturgeons and various Teleosteans.

H. B. HARMAN, Rep. Brit. Ass. 1899, pp. 780 & 781, remarks on the palpebral and oculomotor apparatus of Fishes.

C. H. EIGENMANN & G. D. SHAFER, Amer. Natural. xxxiv, pp. 109–118, figg., write on the retina of Fishes.

F. K. STUDNIČKA, Verh. Anat. Ges. 1900, pp. 44–52, figg., has remarks on the parietal organs of the brain of Fishes.

CATOIS, C.R. Ass. Franc. xxviii, ii, pp. 515–519, gives a summary account of his histological researches on the olfactory and cerebellar ducts of Fishes.

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J. T. CUNNINGHAM, Sexual Dimorphism, pp. 178–227, figg., deals with sexual dimorphism in Fishes.

R. WIEDERSHEIM, Biol. Centrbl. xx, pp. 333–342, figg., reviews our knowledge of the modes of nursing or protecting the offspring in the class Fishes.

J. PELLEGRIN brings out a work on poisonous Fishes: *Les Poissons Vénéneux*, Paris, 8vo, 121 pp., figg.—H. COUTIÈRE, Caus. Sci. Soc. Zool. France 1900, pp. 25–36, has an article on the same subject.

G. B. DE-TONI, Nuova Notarisia x, 1899, pp. 21–27, has general remarks on the food of Fishes, with references to the bibliography of the subject.

R. W. SHUFELDT, Amer. Natural. xxxiv, pp. 275–281, has notes on the psychology of Fishes.

L. EDINGER, Ber. Senckenberg. Ges. 1900, pp. cvii–cxvi, writes on the memory of Fishes.

C. CHUN's popular work "*Aus den Tiefen des Weltmeeres*" contains, pp. 505–537, remarks on and figures of deep-sea Fishes, provisionally identified, several of which prove to belong to new genera and species, which will be described by BRAUER.

D. S. JORDAN, Science (2) xii, p. 785 remarks on the effects of applying generic names according to the rule of regarding as the type the first species of a genus.

## III. FAUNÆ.

## EUROPE.

E. BADE brings out the three first fascicles of a book on the Freshwater Fishes of Central Europe (Berlin, 8vo), and C. RAVENET-WATTEL a pocket-atlas on the Freshwater Fishes of France, Belgium, and Switzerland.



*Scotland.* On the Fishes of the Firth of Clyde: T. SCOTT, Rep. Fish. Board Scotland xviii, pp. 272–293. W. E. CLARKE, Ann. Scott. Nat. Hist. 1900, pp. 8–17, 202–215, gives a list, with references, of the Fishes added to the fauna of the Firth of Forth and its tributaries since 1837.

*Isle of Man.* On the Fishes captured in and around Port Erin Bay: J. T. JENKINS, Rep. Faun. Liverp. Bay v, pp. 291–294, and P. Liverp. biol. Soc. xiv, pp. 99–102.

*Hampshire and Isle of Wight.* List of the Fishes by BOULENGER, Victoria History, Hampshire i, pp. 197–203.

*France.* Synoptic tables of the Freshwater Fishes by J. VACHAL (Clermont, 8vo, 24 pp.). A. ACLOQUE's Faune de France, small edition, last part, pp. 339–476, contains keys for the identification of the Fishes of France, with figures of the principal species.

*Germany.* L. BUXBAUM, Zool. Garten xli, pp. 55 & 56, 390–392, reports on the movements of the Main Fishes during the spring of 1899, and that of 1900.

*Switzerland.* F. ZSCHOKKE, Denk. Schweiz. Ges. xxxvii, pp. 264–270, remarks on the various species of Fishes occurring in lakes of the Alps at great altitudes.

*Portugal.* L. VIEIRA, Ann. Sci. Nat. Porto vi, pp. 152–165, continues his catalogue of the Portuguese Fishes preserved in the Museum of Coimbra University.

*Dalmatia.* Additions to the Fish-fauna by KOLOMBATOVIĆ, Druge Zool. Vij. Dalm. pp. 14–19.

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## ASIA.

*Obi River.* N. WARPACHOWSKI, Annuaire Mus. St. Petersb. iv, pp. 325–374, pls. xvii–xix, brings out the second part of his Ichthyology of this Basin.

*Altai.* On the Fishes of Lake Teletski: WARPACHOWSKI, Annuaire Mus. St. Petersb. v, pp. 412–427, pl. xiii.

*Lake Baikal.* On the Fishes: L. S. BERG, Annuaire Mus. St. Petersb. v, pp. 326–372, pl. viii.

*Persia.* On a collection of Fishes: NIKOLSKI, Annuaire Mus. St. Petersb. iv, pp. 407–417.

*Indian Seas.* A. ALCOCK continues his illustrations of Indian Deep-sea Fishes, Ill. Zool. R. Ind. Marine Survey S. Investigator, Fishes, Part vii, pls. xxvii–xxxv.

*Southern India.* E. THURSTON, Bull. Mus. Madras iii, No. 2, deals with the sea fisheries of Malabar and South Canara.

*Japan.* On collections of Fishes: D. S. JORDAN & J. O. SNYDER, P. U. S. Mus. xxiii, pp. 335–380, pls. ix–xx.

*Hainan.* On some Fishes from the interior: BOULENGER, P. Z. S. 1899, pp. 959–962, pls. lxviii & lxix.

## AFRICA.

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*Gambia.* List of the Fishes collected by Mr Budgett: BOULENGER, P. Z. S. 1900, pp. 511-516.

*Congo Basin.* The sixth part of BOULENGER'S Poissons nouveaux du Congo concludes the first volume of the Ann. Mus. Congo, Zool. (pp. 129-164, pls. xlviii-lvi).

*French Congo.* On new or rare Fishes: PELLEGRIN, Bull. Mus. Paris 1900, pp. 98-101 and 177-182.

*L. Tanganyika.* Diagnoses of new Cyprinid and Silurid Fishes discovered by Mr J. E. S. Moore: BOULENGER, Ann. Nat. Hist. (7) vi, pp. 478-481.

## AMERICA.

JORDAN & EVERMANN'S Fishes of North and Middle America are concluded by the issue of Part IV, containing Systematic Index, Addenda, and 392 plates.

*Canada.* On the freshwater Fishes of the Peninsula of Gaspé, and their distribution in the Maritime provinces: P. Cox, Tr. R. Soc. Canada (2) v, pp. 141-151.

*Lake Maxinkuckee, Indiana.* Remarks on the Fish-fauna, from the point of view of the derivation of species: B. W. EVERMANN, Science (2) xi, pp. 450-454.

*Florida.* B. W. EVERMANN & W. C. KENDALL have compiled a Check-list of the Fishes. Rep. U. S. Fish. Comm. f. 1899, pp. 35-103.

*Bermudas.* Additions to the Fish-fauna, by S. GARMAN, Tr. Connect. Ac. x, pp. 510-512.

*Puerto Rico.* Descriptions of new genera and species by B. W. EVERMANN & M. C. MARSH, Rep. U. S. Fish. Comm. f. 1899, pp. 351-362.

*Mexico.* On a collection of Fishes from the rivers of Mexico: D. S. JORDAN & J. O. SNYDER, Bull. U. S. Fish Comm. f. 1899, pp. 116-147, figg.

*French Guiana.* On a collection of Fishes: L. VAILLANT, Arch. Mus. Paris (4) ii, pp. 123-135, pl. vii.

*Coast of Brazil.* On a collection of Fishes: C. H. GILBERT, P. Washington Ac. ii, pp. 161-184, pl. ix.

*Matto Grosso.* On the Fishes collected by Dr A. Borelli: BOULENGER, Boll. Mus. Torino xv, No. 370.

*Falkland Islands.* On a small collection of Fishes: BOULENGER, Ann. Nat. Hist. (7) vi, pp. 52-54.

## AUSTRALIA and SOUTH PACIFIC.

*Swan River.* On a collection of Fishes: WAITE, Rec. Austral. Mus. iii, pp. 210-216, pl. xxxvii.

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*Tahiti.* On collections of Fishes: H. W. FOWLER, P. Ac. Philad. 1900, pp. 519-524.

*Samoa.* On a small collection of Fishes: H. W. FOWLER, P. Ac. Philad. 1900, pp. 524-528.

## IV. PALÆONTOLOGY.

R. H. TRAQUAIR, in his opening address to the Section of Zoology at the Bradford Meeting of the British Association, reviews recent progress in the palæontology of Fishes. *Nature* lxii, pp. 502-508.

*Spitzbergen*. On the Fish-remains collected by the Swedish Arctic Expedition in 1898: A. S. WOODWARD, *Bih. Svenska Ak.* xxv, iv, No. 5, 7 pp., 1 pl.

*Devonian of Cornwall*. On some Fish-remains: H. FOX, *Geol. Mag.* (2) Dec. iv, vii, pp. 147-149, pl. vii.

*Paris*. E. MASSAT, *Naturaliste* xxii, pp. 264 & 265, figg., enumerates the principal fish-remains occurring in the vicinity of Paris.

*Jurassic of France*. On Fish-remains from Lot-et-Garonne and Indre: SAUVAGE, *Bull. Soc. geol. France* xxviii, pp. 496-501.

*Devonian of the Eifel district, Germany*. On some Fish-remains: F. v. HUENE, *N. Jahrb. Min.* 1900, i, pp. 64-66, figg.

*Miocene of Bohemia*. On some cyprinoid remains: LAUBE, *Abh. Ver. Lotos* ii, pp. 49-56, pls. iii & iv.

*Italy*. On the fossil Fishes of the Province Messina: L. SEGUENZA, *Boll. Soc. geol. Ital.* xix, pp. 443-518, pls. v & vi.

*Lower Tertiary of Bosnia*. On new Fishes: SIEBENROCK, *Wiss. Mitt. Bosnien* vii, pp. 683-694, pls. xii & xiii.

*Chalk of Kansas*. A Monograph of the Ganoid and Teleostean Fishes, by F. B. LOOMIS, *Palæontogr.* xlv, pp. 213-284, figg., pls. xix-xxvii. On various Pycnodont and Selachian teeth: WITLISTON, *Kansas quart.* ix, pp. 27-42, pls. vi-xiv.

*Parana (Eocene?) Formation, Argentina*. On some Fish-remains: A. S. WOODWARD, *Ann. Nat. Hist.* (7) vi, pp. 1-7.

## V. REFERENCES ARRANGED SYSTEMATICALLY.

## TELEOSTOMI.

E. P. ALLIS, *Anat. Anz.* xviii, pp. 257-289, figg., has a paper dealing with the homologies of the maxillary bone in Crossopterygian and other Teleostome Fishes.

H. F. E. JUNGENSEN, *Zool. Anz.* xxiii, pp. 328-334, has a preliminary communication on the urogenital organs of *Polypterus* and *Amia*.

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S. USSOW, *Bull. Soc. Moscou* 1900, pp. 175-240, pls. i-iv, has a paper on the anatomy and development of the vertebral column of Teleosteans.

H. M. KYLE, *J. Linn. Soc.* xxvii, pp. 541-556, pl. xxxviii, writes on the presence of nasal secretory sacs and a naso-pharyngeal communication in Teleostei.

T. W. BRIDGE, *J. Linn. Soc.* xxvii, pp. 503-540, pls. xxxvi & xxxvii, writes on the air-bladder of *Notopterus* and its connection with the auditory organ.

E. YUNG & O. FUHRMANN, *Arch. Zool. exp.* (3) viii, pp. 333-351, pls. ix & x, have a contribution to the histology of the mucous membrane of the intestine in *Lota vulgaris*.

C. S. TOMES, *Phil. Trans.* cxliii, pp. 35-46, pl. v, has further observations on the development of the enamel in Teleosteans.

- W. G. RIDEWOOD, P. Z. S. 1899, pp. 939-956, pls. lxiii-lxv, has made a study of the relations of the efferent branchial blood-vessels to the circulus cephalicus in Teleostean Fishes.
- C. M. FÜRST, Anat. Anz. xviii, pp. 253-255, figg., remarks on ring-shaped formations in the ganglion-cells of Salmon-embryos.
- F. RAFFAELE, Anat. Anz. xviii, pp. 337-344, figg., has a note on the genesis of the lateral nerve in larvæ of *Lophius*.
- G. D. SCHAFER, Arch. Entwicklmech. x, pp. 685-691, pl. xvii, writes on some points in the structure of the retina of *Micropterus salmonoides*.
- C. H. EIGENMANN, P. Indiana Ac. 1899, pp. 31-46, figg., and Science (2) xi, pp. 492-503, figg., discusses degeneration in the eyes of the Fishes of the North American Caves.
- F. GOTCH, P. R. Inst. Brit. xvi, pp. 114 & 115, gives an abstract of a lecture on the electric organ of *Malopterurus*.
- J. T. CUNNINGHAM, P. Irish Ac. (3) v, pp. 752 & 753, remarks on the young stages of Teleosteans from the West Coast of Ireland.
- F. HEINCKE & E. EHRENBAUM, Wiss. Meeresuntersuch. (2) iii, pp. 127-332, figg., pls. ix & x, have a memoir on the eggs and larvæ of the Fishes of the Bay of Heligoland.
- W. GARSTANG, J. Mar. Biol. Ass. (2) vi, pp. 70-93, gives an account of preliminary experiments on the rearing of Sea-Fish larvæ.
- E. BATAILLON, C.R. Ass. Franc. xxviii, ii, pp. 529-533, writes on the blastoderm and the parablast of Teleosteans.
- F. B. SUMNER, Mem. N. York Ac. ii, pp. 47-83, figg., has a memoir on Kupffer's vesicle and its relation to gastrulation and concrescence in Teleosteans.
- J. NUSBAUM & S. SIDORIAK, Arch. Entwicklmech. x, pp. 645-684, pls. xiv-xvi, write on the regeneration of lost parts in advanced embryos of *Salmo fario*.
- T. H. MORGAN, Arch. Entwicklmech. x, pp. 120-134, figg., has made experiments on the regeneration of the fins of Teleosteans.
- C. B. KLUNZINGER, Jahresh. Ver. Württemb. lvi, pp. 519-532, remarks on nanism in Teleostean Fishes.

## ACANTHOPTERYGII.

## CENTRARCHIDÆ.

- Eupomotis*, Gill & Jord. Synopsis of the species by S. E. MEEK, Field Mus. Zool. iii, No. 2; *E. gibbosus*, C. & V. On its introduction in Switzerland: FOREL, Ann. Sci. Nat. (4) x, p. 76.

## PERCIDÆ.

- Lucioperca*, Cuv. On the Caspian species: LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 4.
- Etheostoma aubeenaubi*, sp. n., EVERMANN, Rep. U. S. Fish. Comm. f. 1899, p. 367, pl. xvii, L. Maxinkuckee, Indiana.
- Hadropterus maxinkuckiensis*, sp. n., EVERMANN, t. c. p. 366, L. Maxinkuckee.

## SERRANIDÆ.

- Coreoperca*, Herz. Genus defined by BOULENGER, P. Z. S. 1899, p. 959; *C. whiteheadi*, sp. n., id. ibid. p. 960, pl. lxviii, Hainan.



- Labrax longiceps*, p. 685, pl. xii, fig. 1, *bosniensis*, p. 687, pl. xii, fig. 2, and *steindachneri*, p. 689, pl. xiii, fig. 3, spp. nn. (foss.), SIEBENROCK, Wiss. Mitt. Bosnien vii, Lower Tertiary, Bosnia.
- Polyprion cernium*, C. & V. Remarks by JOUAN, Mem. Soc. Cherbourg xxxi, p. 219.
- Serranus gracilispinis*, sp. n. (foss.), SIEBENROCK, t. c. Lower Tertiary, Bosnia.
- Prionodes baldwini*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 353, Puerto Rico.
- Bryttosus*, g. n. for *Serranus kawamebari*, Temm. & Schleg.: JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 354, pl. xii.
- Rhegma*, g. n., allied to *Rhypticus*, *Grammistes*, and *Gramma*. GILBERT, in JORDAN & EVERMANN, Fish N. Amer. p. 3169; *R. thaumasium*, sp. n., id. ibid. p. 3170, Panama.
- Lates niloticus*, L. On mummies from Upper Egypt: PELLEGRIN, Bull. Mus. Paris 1900, p. 175.
- Lutjanus apodus*, Walb. Note by GILBERT, P. Washington Ac. ii, p. 170.
- Apogon brasilianus*, sp. n., GILBERT, P. Washington Ac. ii, p. 168, pl. ix, fig. 3, Coast of Brazil.
- Eteliscus*, g. n. for *Etelis berycoides*, Hilgend.: JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 355.

## PRISTIPOMATIDÆ.

- Synagrops philippinensis*, Gthr., figured by ALCOCK, Ill. Zool. Investig. pl. xxviii, fig. 1.
- Cæsiø axillaris*, sp. n., BOULENGER, Mar. Invest. S. Afr. No. 8, p. 10, pl. —, Cape of Good Hope.

## SQUAMIPINNES.

- Holacanthus conspicillatus* and *semicinctus*, spp. nn., WAITE, Rec. Austral. Mus. iii, pp. 203 & 204, pls. xxxv & xxxvi, Lord Howe Id.

## MULLIDÆ.

- Upeneus caninus*, sp. n., GILBERT, P. Washington Ac. ii, p. 165, pl. ix, fig. 2, Pernambuco.

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- Proteracanthus sarissophorus*, Cantor. On a specimen with anomalous second anal spine: PELLEGRIN, Bull. Mus. Paris 1899, p. 356.
- Calamus kendalli*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, p. 354, Puerto Rico.

## HOPLOGNATHIDÆ.

- Hoplegnathus woodwardi*, sp. n., WAITE, Rec. Austral. Mus. iii, p. 212, pl. xxxvii, Mouth of the Swan River.

## SCORPÆNIDÆ.

- Sebastopsis guamensis*, Q. & G., redescribed by H. W. FOWLER, P. Ac. Philad. 1900, p. 521.

- Sebastodes hakodatis* and *scythropus*, spp. nn., JORDAN & SNYDER, P. U. S. Mus. xxiii, pp. 361 & 363, pls. xiv & xv, Japan.  
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*Caracanthus maculatus*, Gray, redescribed by H. W. FOWLER, t. c. p. 515.

## BERYCIDÆ.

- Bathyclupea hoskynii*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxviii, fig. 2.

## SCIÆNIDÆ.

- Pseudolithus mitsukurii*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 356, pl. xiii, Bay of Tokyo, Japan.  
*Cilus*, g. n. [= *Sciæna*, Cuv.—REC.], DELFIN, Act. Soc. Chili x, p. 55; *C. montti*, sp. n., id. *ibid.*, p. 56, fig., Coast of Chili.  
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## ACRONURIDÆ.

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## TRICHIURIDÆ.

- Cimolichthys*, Leidy (foss.). American species monographed by LOOMIS, Palæontogr. xlv, p. 267, pl. xxvii.

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## CORYPHENIDÆ.

- Lampris pelagicus*, Gunn. On its occurrence on the Murman coast: LÖNNBERG, Annuaire Mus. St. Petersb. v, p. 242; KNIPOWITSCH, t. c. p. 244.  
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## SCOMBRIDÆ.

- Scomber scombrus*, L. On its variations on the coasts of Scotland: H. C. WILLIAMSON, Rep. Fish. Board Scotland xviii, p. 294, fig.  
*Thynnus alalunga*, Gm. Recorded from off the Orkneys by W. E. CLARKE, Ann. Scott. Nat. Hist. 1900, p. 248.  
*Luvarus imperialis*, Raf. On a specimen from the Adriatic: KOLOMBATOVIĆ, Druge Zool. Vij. Dalm. p. 14.

## TRACHINIDÆ.

- Notothenia porteri*, sp. n., DELFIN, Revist. chilena iii, 1899, p. 117, Chili.  
*Chiasmodes niger*, Johns., figured by ALCOCK, Ill. Zool. Investig. pl. xxviii, fig. 3.

- Champsodon vorax*, Gthr., figured by ALCOCK, l. c. fig. 5.  
*Bembrops caudimacula*, Stdr., figured by ALCOCK, op. cit. pl. xxxi, fig. 2.  
*Cryodraco*, g. n., allied to *Pagetodes*, Richards.: DOLLO, Bull. Ac. Belgique 1900, p. 129, for *C. antarcticus*, sp. n., id. ibid. p. 130, Antarctic Ocean.  
*Gerlachea*, g. n., allied to the preceding: DOLLO, t. c. p. 195, for *G. australis*, sp. n., id. ibid. p. 196, Antarctic Ocean.  
*Racovitzia*, g. n., remarkable for the presence of an abdominal brood-pouch: DOLLO, t. c. p. 317, for *R. glacialis*, sp. n., id. ibid. p. 318, Antarctic Ocean.

## PEDICULATI.

- Lophius gracilimanus*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxix, fig. 3.  
*Oniroides niger*, Johns., figured by ALCOCK, t. c. pl. xxviii, fig. 4.  
*Ceratias bispinosus*, Gthr., figured by ALCOCK, op. cit. pl. xxxv, fig. 2.

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- G. SURBECK, Zool. Anz. xxiii, pp. 229 & 230, 553-558, describes a supposed copulatory organ in *Cottus gobio*.  
*Cottus bubalis*, L. On a specimen killed in its attempt to swallow a *Zoarces viviparus*: TRAQUAIR, Ann. Scott. Nat. Hist. 1900, p. 88; *C. comephoroides*, p. 338, pl. viii, fig. 3, and *nikolskii*, p. 346, pl. viii, figg. 1 & 2, spp. nn., L. S. BERG, Annuaire Mus. St. Petersb. v, L. Baikal.  
*Trigla gurnardus*, L. On its distribution and habits in the North Sea: W. C. MCINTOSH, C.R. Ass. Franc. xxviii, ii, p. 512, and Rep. Brit. Ass. 1899, p. 787.  
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## GOBIIDÆ.

- Gobius knerii*, Stdr. Note by KOLOMBATOVIĆ, Druge Zool. Vij. Dalm. p. 15; *G. steindachneri*, sp. n., id. ibid. p. 16, Dalmatia; *G. bayamonensis*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 355, Puerto Rico.  
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*Chænogobius macrogathus*, Blkr. Note by JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 372.  
*Trifissus*, g. n., allied to *Trienophorichthys*, for *T. ioturus*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 373, pl. xviii, Bay of Tokyo, Japan.  
*Crystallogobius nilssonii*, Gill. On specimens from the Adriatic: KOLOMBATOVIĆ, Druge Zool. Vij. Dalm. p. 17.  
*Sicydium caguite*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 355, Puerto Rico.  
*Callionymus fasciatus*, C. & V. On a specimen from the Coast of Dalmatia: KOLOMBATOVIĆ, t. c. p. 18; *C. beniteguri*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 370, pl. xvii, Bay of Tokyo, Japan.

## BLENNIIDÆ.

- Blennius yatebei*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 374, pl. xix, Japan.
- Brannerella*, g. n., closely allied to *Starksia*, Jord. & Everm., for *B. brasiliensis*, sp. n., GILBERT, P. Washington Ac. ii, p. 180, pl. ix, fig. 1, Coast of Brazil.
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- Mulacotenus culebræ*, p. 357, *moorei*, p. 358, and *puertoricensis*, p. 358, spp. nn., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, Puerto Rico.
- Auchenistius*, g. n., near *Auchenopterus*, for *A. stahli*, sp. n., EVERMANN & MARSH, t. c. p. 359, Puerto Rico.
- Auchenopterus albicaudus*, p. 360, *rubescens*, p. 360, *cingulatus*, p. 361, and *fajardo*, p. 361, spp. nn., EVERMANN & MARSH, t. c., Puerto Rico.
- Coralliozetus*, g. n., probably related to *Ophioblennius*, for *C. cardonæ*, sp. n., EVERMANN & MARSH, t. c. p. 362, Puerto Rico.
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## MUGILIDÆ.

- Mugil caldwelli*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 524, pl. xix, fig. 4, Samoa.

## ATHERINIDÆ.

- Atherina mochon*, C. & V. Note by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 8.
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## GASTROSTEIDÆ.

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## GOBIESOCIDÆ.

- F. GUITEL, C.R. Ac. Sci. cxxx, pp. 1773-1777, writes on the kidneys of *Lepadogaster gouanii*.  
*Mirbelia gracilis*, Canestr. On a specimen from the Adriatic: KOLOMBATOVIĆ, Druge Zool. Vj. Dalm. p. 18.

## LABYRINTHICI.

- C. GRIGORIAN, Zool. Anz. xxiii, pp. 161-170, figg., investigates the structure of the so-called 'labyrinthic' accessory organ of respiration in the *Osphromenidæ*, *Anabantidæ*, and *Ophiocephalidæ*, and T. SCHACHMAGONOW, t. c. pp. 385-387, figg., points out the relation between it and the air-bladder in *Betta pugnax*.  
*Ctenopoma*, Ptrs. On the specimens in the Paris Museum: PELLEGRIN, Bull. Mus. Paris 1899, pp. 357-364; *C. ocellatum* and *acutirostre*, pp. 359 & 360 [*Anabas weeksii*, Blgr.—REC.], and *denticulatum*, p. 361, spp. nn., id. ibid. French Congo.

## LOPHOTIDÆ.

- Lophotes cepedianus*, Giorna. On a specimen from the Cape of Good Hope: BOULENGER, Mar. Invest. S. Afr., No. 3, p. 13, pl. —.

## NOTACANTHIDÆ.

- Pronotacanthus*, g. n., for *Anguilla sahel-almæ*, J. W. Davis (foss.), A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 322.

## ACANTHOPTERYGII PHARYNGOGNATHI.

## POMACENTRIDÆ.

- Eupomacentrus nigricans*, Lacép., redescribed by H. W. FOWLER, P. Ac. Philad. 1900, p. 503.  
*Glyphisodon limbatus*, C. & V., redescribed by H. W. FOWLER, t. c. p. 504.  
*Amphiprion latezonatus*, sp. n., WAITE, Rec. Austral. Mus. iii, p. 201, pl. xxxiv, Lord Howe Id.

## LABRIDÆ.

- Labrus maculatus*, Bl. and *melops*, L. Note by GARSTANG & BYRNE, J. Mar. Biol. Ass. (2) vi, p. 214.  
*Doratonotus decoris*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, p. 354, Puerto Rico.  
*Sparisoma frondosum*, Cuv., redescribed by GILBERT, P. Washington Ac. ii, p. 174.  
*Anampses curvieri*, Q. & G., redescribed by H. W. FOWLER, P. Ac. Philad. 1900, p. 506.  
*Hemipteronotus copei*, sp. n., H. W. FOWLER, t. c. p. 508, pl. xx, fig. 1, Sandwich Ids.  
*Coris aygula*, Lacép., redescribed by H. W. FOWLER, t. c. p. 510.  
*Iridio poeyi*, Sldr. (*kirschii*, Jord. & Everm.). Note by GILBERT, P. Washington Ac. ii, p. 173.

## CICHLIDÆ.

- Paratilapia multidentis*, sp. n., PELLEGRIN, Bull. Mus. Paris 1900, p. 98, French Congo.
- Pelmatochromis dimidiatus*, sp. n., PELLEGRIN, t. c. p. 99, Ubangi [= *Pseudoplesiops nudiceps*, Blgr., var.—REC.]; *P. lepidurus*, sp. n., PELLEGRIN, t. c. p. 275, Congo [= *P. lateralis*, Blgr.—REC.]; *P. polylepis*, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 143, pl. lii, fig. 1, L. Tanganyika.
- Acara pallida*, Heck. Note by VAILLANT, Arch. Mus. Paris (4) ii, p. 134.
- Cichlasoma steindachneri*, sp. n., JORDAN & SNYDER, Bull. U.S. Fish Comm. f. 1899, p. 143, fig., R. Verde, near Rascon, Mexico.
- Heros istlanus*, sp. n., JORDAN & SNYDER, t. c. p. 144, fig., R. Ixtla, Mexico.
- Neotroplus carpintis*, sp. n., JORDAN & SNYDER, t. c. p. 146, fig., Laguna de Carpinte, Tamanlipas, Mexico.
- Tilapia bilineata*, p. 276, Congo, and *sexfasciata*, p. 277, Central Africa, spp. nn., PELLEGRIN, Bull. Mus. Paris 1900.
- Tropheus annectens*, sp. n., BOULENGER, t. c. p. 148, pl. lii, fig. 2, L. Tanganyika.
- Spathodus*, g. n., allied to *Eretmodus*, Blgr., for *S. erythron*, sp. n., BOULENGER, t. c. p. 152, pl. lii, fig. 2, L. Tanganyika.
- Plecodus paradoxus*, Blgr., figured by BOULENGER, t. c. pl. lii, fig. 4.

## ANACANTHINI.

## LYCODIDÆ.

- Lycodes*, Reinh. Synopsis of the species, which are reduced to four: SMITT, Ann. Nat. Hist. (7) v, p. 56; *L. flavus*, sp. n., BOULENGER, op. cit. vi, p. 53, Falkland Ids.
- Brotula townsendi*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 518, pl. xx, fig. 3, Sandwich Ids.

## GADIDÆ.

- Gadus esmarkii*, Nilss. On a specimen from the English Channel: GARSTANG, J. Mar. Biol. Ass. (2) vi, p. 274.
- Merluccius vulgaris*, Flem. On an albino: GARSTANG, t. c. p. 275.
- Raniceps trifurcatus*, Turt. On two specimens from off Berwick: G. BOLAM, Hist. Berwick Club xvii, p. 112.
- Brosomphycis verrillii*, sp. n., S. GARMAN, Tr. Connect. Ac. x, p. 511, Bermudas.

## OPHIDIIDÆ.

- Neobythites pterotus*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxix, fig. 1.
- Saccogaster maculata*, Alcock, figured by ALCOCK, t. c. fig. 2.
- Fieraster parvipinnis*, Kaup, redescribed and figured by H. W. FOWLER, P. Ac. Philad. 1900, p. 523, pl. xix, fig. 5.

## MACRURIDÆ.

- Macrurus polylepis*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxix, fig. 4; *M. lecointei*, sp. n., DOLLO, Bull. Mus. Belg. 1900, p. 383, Antarctic Ocean.

- Cælorhynchus kishinouyei*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 376, pl. xx, Japan.  
*Dolloa*, n. n. for *Moseleya*, Jord. nec Quelch. JORDAN, Amer. Natural. xxxiv, p. 897.

## PLEURONECTIDÆ.

- H. M. KYLE, Rep. Fish. Board Scotland xviii, pp. 189-241, pls. ix & x, discusses the classification and geographical distribution of the Flat-Fishes.  
 H. M. KYLE, J. Linn. Soc. xxvii, pp. 541-556, pl. xxxviii, describes the nasal organ of *Cynoglossus semilævis*, Gthr.  
*Hippoglossus vulgaris*, Flem. On specimens from Cherbourg: JOUAN, Mem. Soc. Cherbourg xxxi, p. 223.  
*Verasper otakii*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 378, Tokyo, Japan.  
*Pleuronectes platessa*, L. On growth and variations: H. M. KYLE, Rep. Fish. Board Scotland xviii, p. 189, pls. ix & x; *P. flesus*, L. On its variations: DUNCKER, Wiss. Meeresuntersuch. (2) iii, p. 333, figg., pls. xi-xiv, and Zool. Anz. xxiii, p. 141. Note on the habits: R. L. ASCROFT, P. Liverp. biol. Soc. xiv, p. 174. On a sinistral specimen: TRAQUAIR, Ann. Scott. Nat. Hist. 1900, p. 89, fig.  
*Kareius*, g. n., for *Liopsetta scutifer*, Sldr.: JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 379.  
*Usinostia*, g. n., for *Solea japonica*, Temm. & Schleg.: JORDAN & SNYDER, t. c. p. 389.  
*Zebrias*, g. n., for *Solea zebrina*, Temm. & Schleg.: JORDAN & SNYDER, l. c.  
*Areliscus*, g. n., for *Solea joyneri*, Gthr.: JORDAN & SNYDER, l. c.  
*Synaptura marginata*, sp. n., BOULENGER, Mar. Invest. S. Afr. No. 8, p. 11, pl. —, Cape of Good Hope.

## PHYSOSTOMI.

## SILURIDÆ.

- Clarias budgetti*, sp. n., BOULENGER, P. Z. S. 1900, p. 513, Gambia; *C. breviceps*, sp. n., id., Ann. Mus. Congo, Zool. i, p. 135, pl. xlvi, fig. 6, Mayombe, Congo.  
*Eutropius grenfelli*, p. 137, pl. 1, fig. 1, Congo, *debanwi*, p. 138, pl. 1, fig. 2, Uerre, Congo, and *lemairii*, p. 138, pl. 1, fig. 3, Katanga, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i.  
*Amiurus prosthistiis*, Cope. Note by H. W. FOWLER, P. Ac. Philad. 1900, p. 352.  
*Istlarius*, g. n., allied to *Ictalurus*, for *I. balsanus*, sp. n., JORDAN & SNYDER, Bull. U. S. Fish Comm. f. 1899, p. 118, figg., R. Ixtla, Mexico.  
*Chrysichthys myriodon*, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 139, pl. li, L. Tanganyika; *C. brachynema*, sp. n., id., Ann. Nat. Hist. (7) vi, p. 480, L. Tanganyika.  
*Gephyroglanis ogoensis*, sp. n., PELLEGRIN, Bull. Mus. Paris 1900, p. 180, Ogowe.  
*Arius physacanthus*, Vaill., described and figured by VAILLANT, Arch. Mus. Paris (4) ii, p. 128, pl. vii, fig. 1; *A. bleekeri*, sp. n., POPTA, Notes Leyden Mus. xxii, p. 71, Malay Archipelago.  
*Synodontis ocellifer*, sp. n., BOULENGER, P. Z. S. 1900, p. 514, Gambia; *S. granulosus*, sp. n., id., Ann. Nat. Hist. (7) vi, p. 480, L. Tanganyika.

- Chiloglanis*, Peters. Genus and type species characterized by BOULENGER, Ann. Nat. Hist. (7) vi, p. 521; *C. niloticus*, sp. n., id. ibid. p. 522, Arko, Soudan.
- Euchilichthys*, g. n. for *Atopochilus guentheri*, Schilth., and *Chiloglanis dybowskii*, Vaill. BOULENGER, t. c. p. 523.
- Atopochilus*, Sauv. Genus and type species characterized by BOULENGER, t. c. p. 524.
- Mochocus*, Joannis (= *Rhinoglanis*, Gthr.). Genus and type species characterized by BOULENGER, t. c. p. 525.
- Doumea*, Sauv. Genus and type species characterized by BOULENGER, t. c. p. 526; *D. scaphyrhynchura*, Vaillant, described by PELLEGRIN, Bull. Mus. Paris 1900, p. 181.
- Phractura*, n. n. for *Peltura*, Perugia nec M.-Edw.: BOULENGER, t. c. p. 527; *P. bovei*, Perugia, and *scaphyrhynchura*, Vaill., recharacterized, id. ibid. p. 528.
- Andersonia*, g. n., allied to the preceding: BOULENGER, t. c. p. 528, for *A. leptura*, sp. n., id. ibid. p. 529, Koshek, Soudan.
- Plecotomus keylandi*, sp. n., BOULENGER, Ann. Nat. Hist. (7) v, p. 165, S. Paulo, Brazil.
- Loricaria latirostris* and *paulina*, spp. nn., BOULENGER, t. c. pp. 165 & 166, S. Paulo, Brazil.

## SCOPELIDÆ.

- Odontostomus atratus*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxiii, fig. 3.
- Scopelus pyrsobolus*, Alcock, figured by ALCOCK, op. cit. pl. xxx, fig. 3.
- Harpodon squamosus*, Alcock, figured by ALCOCK, l. c. fig. 1.
- Bathypterois insularum*, Alcock, figured by ALCOCK, op. cit. pl. xxxii, fig. 1.
- Synodus sharpi*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 497, pl. xix, fig. 2, Sandwich Ids.

## CYPRINIDÆ.

- V. GRATZIANOW, Zool. Anz. xxiii, pp. 66-73, figg., writes on the histological structure of the pharyngeal horny plate of Cyprinids.
- L. BLOCH, Jena. Zeitschr. xxxiv, pp. 1-57, figg., pls. i & ii, writes on the air-bladder and the Weberian ossicles of *Nemachilus barbatulus*.
- E. BATAILLON, C.R. Ass. Franc. xxviii, ii, pp. 533-537, has obtained early embryonic stages by crossing *Leuciscus phoxinus* with *Cyprinus auratus* and *Cobitis tenia*.
- Gymnostomus lepturus*, sp. n., BOULENGER, P. Z. S. 1899, p. 961, pl. lxix, fig. 1, Hainan.
- Aspiostoma zarudnyi*, Nik., is redescribed and referred to *Schizothorax* by NIKOLSKI, Annuaire Mus. St. Petersb. iv, p. 409.
- Discognathus lamta*, Ham. Buch., and *variabilis*, Heck. Notes on Persian specimens by NIKOLSKI, t. c. pp. 411 & 412; *D. rossicus*, sp. n., NIKOLSKI, op. cit. v, p. 239, Transcaspia and Persia.
- Chondrostoma nasus*, L. On its occurrence in the Loire: PELLEGRIN, Bull. Soc. zool. France xxv, p. 64.
- Capoëta amir*, Heck. (?). Note by NIKOLSKI, op. cit. v, p. 408; *C. tanganice*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 478, L. Tanganyika.
- Barbus bampurensis*, sp. n., NIKOLSKI, op. cit. iv, p. 410, Bampur R., Persia; *B. katangæ*, p. 132, pl. xlix, fig. 1, Katanga, and *tropidolepis*, p. 133, pl. xlix, fig. 2, L. Tanganyika, spp. nn., BOULENGER,



- Ann. Mus. Congo, Zool. i; *B. platyrhinus* and *serrifer*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, p. 479, L. Tanganyika; *B. analis*, sp. n., id. ibid., L. Kivu and Rusisi R.
- Gobio biwa* and *mayedæ*, spp. nn., JORDAN & SNYDER, P. U. S. Mus. xxiii, pp. 340 & 342, pl. ix, figg. 1 & 2, L. Biwa, Japan.
- Leuciscus idus*, L., *rutilus*, L., *virgo*, Heck., and *frisii*, Nordm. Notes on Caspian specimens: LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 11; *L. verillifer*, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 54, pl. iii, fig. 3, Brown Coal of Bohemia; *L. turneri*, sp. n. (foss.), LUCAS, P. U. S. Mus. xxiii, p. 333, Miocene of Nevada.
- Notropis rasconis*, p. 121, fig., R. Verde, nr. Rascon, Mexico, and *calientis*, p. 122, fig., R. Verde, Aguas Calientes, Mexico, spp. nn., JORDAN & SNYDER, Bull. U.S. Fish Comm. f. 1899.
- Xystrosus*, g. n., allied to *Notropis*, for *X. popsche*, sp. n., JORDAN & SNYDER, t. c. p. 123, figg., Laguna de Chapala, Jalisco, Mexico.
- Falcula*, g. n., also allied to *Notropis*, for *F. chapalæ*, sp. n., JORDAN & SNYDER, t. c. p. 124, fig., Laguna de Chapala.
- Tinca obruncata*, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 49, pl. iii, fig. 1, Brown Coal of Bohemia.
- Acheilognathus steenackeri*, Sauv. = *A. rhombeum*, Temm. & Schleg., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 343.
- Abramis vinba*, L., *blicca*, Bl., *ballerus*, L., and *sopa*, Pall. Notes on Caspian specimens by LÖNNBERG, Bih. Svenska Ac. xxvi, iv, No. 8, p. 19.
- Alburnus chalcoides*, Gildenst. Note by LÖNNBERG, t. c. p. 17; *A. steindachneri*, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 51, pl. iii, fig. 2, Brown Coal of Bohemia.
- Otakia*, g. n., probably related to *Pseudorasbora* and *Tribolodon*, for *O. rasborina*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 345, pl. ix, fig. 3, L. Biwa, Japan.
- Ischikauia*, g. n., apparently related to *Xenocypris*, for *Opsariichthys steenackeri*, Sauv. JORDAN & SNYDER, t. c. p. 346, pl. x.
- Barilius hainanensis*, sp. n., BOULENGER, P. Z. S. 1899, p. 961, pl. lxix, fig. 2, Hainan; *B. weeksii* and *weynsii*, spp. nn., id. Ann. Mus. Congo, Zool. i, pp. 134 & 135, pl. xlviii, figg. 4 & 5, Upper Congo; *B. moorii*, and *tanganice*, spp. nn., id. Ann. Nat. Hist. (7) vi, p. 480, L. Tanganyika.
- Leptocypris*, g. n., allied to *Barilius*, Ham. Buch. BOULENGER, Ann. Mus. Congo, Zool. i, p. 133, for *L. modestus*, sp. n., id. ibid. p. 134, pl. xlix, fig. 3, Upper Congo.
- Cobitis fossilis*, L. Recorded from the Moselle valley by L. MAILLARD, Bull. Soc. Nancy (3) i, p. 176. On a monstrous, gibbose specimen: A. GIARD, C.R. Soc. Biol. lii, p. 93.
- Nemachilus toni*, Dyb., figured by L. S. BERG, Annuaire Mus. St. Petersb. v, pl. viii, fig. 4.
- Glanioptis hanitschi*, Blgr., figured by HANITSCH, J. Straits Asiat. Soc. xxxiv, pl. ii, fig. 2.

## CHARACINIDÆ.

- Anostomus borellii*, sp. n., BOULENGER, Boll. Mus. Torino xv, No. 370, p. 2, Matto Grosso, Brazil.
- Pyrrhulina filamentosa*, C. & V., described and figured by VAILLANT, Arch. Mus. Paris (4) ii, p. 132, pl. vii, fig. 3.
- Tetragonopterus bakiensis*, Stdr. Note by GILBERT, P. Washington Ac. ii, p. 162; *T. callistus*, sp. n., BOULENGER, Boll. Mus. Torino xv, No. 370, p. 2, Matto Grosso, Brazil.

- Chirodon calliurus*, sp. n., BOULENGER, t. c. p. 3, Matto Grosso, Brazil.  
*Bryconæthiops boulengeri*, sp. n., PELLEGRIN, Bull. Mus. Paris 1900, p. 101, Ogowé [= *B. microstoma*, Gthr.—REC.].  
*Alestes lateralis*, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 130, pl. xlvi, fig. 2, L. Dilolo, Katanga.  
*Nannocharax elongatus*, sp. n., BOULENGER, t. c. p. 131, pl. xlviii, fig. 3, Upper Congo.  
*Xenocharax crassus*, sp. n., PELLEGRIN, t. c. p. 100, French Congo.  
*Mesoborus*, g. n., allied to *Paraphago*, Blgr.; PELLEGRIN, t. c. p. 179; *M. crocodilus*, sp. n., id. ibid. p. 179, Diélé, French Congo.

## CYPRINODONTIDÆ.

- Characodon encaustus*, sp. n., JORDAN & SNYDER, Bull. U. S. Fish Comm. f. 1899, p. 126, fig., Laguna de Chapala, Jalisco, Mexico.  
*Xenendum*, g. n., allied to *Characodon*. JORDAN & SNYDER, t. c. p. 127; *X. caliente*, p. 127, fig., R. Verde, nr. Aguas Calientes, Mexico, and *xaliscone*, p. 128, fig., Laguna de Chapala, Jalisco, Mexico, spp. nn., JORDAN & SNYDER, t. c.  
*Poecilia limantouri*, sp. n., JORDAN & SNYDER, t. c. p. 129, fig., Tampico, Tamaulipas, Mexico.  
*Xiphophorus montezumæ*, sp. n., JORDAN & SNYDER, t. c. p. 131, fig., R. Verde, near Rascon, Mexico.  
*Rivulus geayi*, Vaill., described and figured by VAILLANT, Arch. Mus. Paris (4) ii, p. 130, pl. vii, fig. 2.

## SCOMBRESOCIDÆ.

- Hemirhamphus depauperatus*, Lay & Benn., redescribed and figured by H. W. FOWLER, P. Ac. Philad. 1900, p. 499, pl. xix, fig. 3.  
*Exocoetus dodereleini*, Sldr. = *E. agoo*, Temm. & Schleg., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 351.

## MORMYRIDÆ.

- Mormyrops vaillanti*, sp. n., PELLEGRIN, Bull. Mus. Paris 1899, p. 362, Diélé, French Congo [= *M. nigricans*, Blgr.—REC.].  
*Marcusenius cabræ*, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 130, pl. xlviii, fig. 1, Mayombe, Congo.

## STERNOPTYCHIDÆ.

- Chauliodus pammelas*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxx, fig. 4.

## STOMIATIDÆ.

- Photostomias atrox*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxx, fig. 2.

## SALMONIDÆ.

- G. E. H. BARRETT-HAMILTON remarks on the nuptial characters of certain Salmonids, as a means of explaining a possible mode of origin of some of the secondary sexual characters in Animals. P. Cambridge Soc. x, pp. 279–285.

- J. K. BARTON, J. Anat. Physiol. norm. path. (2) xiv, pp. 295-300, pls. xl-xliii, has made an examination of the digestive tract in *Salmo salar* with the result of disproving the existence of a desquamative catarrh of the mucous lining of the intestine which was supposed to take place in Salmon re-entering rivers.—Remarks by GULLAND, op. cit. xv, pp. 114-116.
- K. LAMPERT, Allgem. Fischerei-Zeitung 1900, No. 15, remarks on the food of Trout and Charr in Germany.
- Salmo salar caspius*, Kessl. Note by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 25; *S. fario*, L. On deformed specimens: TRAQUAIR, Ann. Scott. Nat. Hist. 1900, p. 87, pl. i; *S. fluviatilis*, Pall., described by WARPACHOWSKI, Annuaire Mus. St. Petersb. iv, p. 370; *S. irideus*, Gibb. On its introduction in France: LETACQ, Bull. Soc. Rouen (4) xxxv, p. 145.
- Stenodus leucichthys*, GÜLDENST. Note by LÖNNBERG, t. c. p. 26; *S. nelma*, Pall., described by WARPACHOWSKI, Annuaire Mus. St. Petersb. iv, p. 329.
- Coregonus*, L. On dwarfed races of the European species: KLUNZINGER, Jahresh. Ver. Württemb. lvi, p. 527; *C. pelet*, Lep., p. 339, pl. xvii, figg. 1 & 2, *merkki*, Gthr., p. 344, pl. xix, figg. 4 & 5, *tugun*, p. 350, pl. xix, fig. 3, *muksun*, Pall., p. 354, pl. xix, fig. 1, *polcur*, Pall., p. 360, pl. xviii, figg. 1 & 2, and *nasus*, Pall., p. 365, pl. xix, fig. 2, described and figured by WARPACHOWSKI, t. c.; *C. smitti*, sp. n., WARPACHOWSKI, Annuaire Mus. St. Petersb. v, p. 414, pl. xiii, fig. 1, L. Teletski, Altai; *C. mongolicus*, sp. n., id. ibid. p. 424, pl. xiii, fig. 2, Mongolia.
- Pachyrhizodus*, Dixon (foss.). American species monographed by LOOMIS, Palæontogr. xlv, p. 258; *P. curvatus*, sp. n., id. ibid. p. 265, pl. xxv, figg. 6-8, Chalk of Kansas.

## CLUPEIDÆ.

- Engraulis holodon*, sp. n., BOULENGER, Mar. Invest. S. Afr. No. 8, p. 12, pl. —, fig. 3, Cape of Good Hope.
- Stolephorus gilberti* and *garmani*, spp. nn., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, p. 352, Puerto Rico; *S. purpureus*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 497, pl. xix, fig. 1, Sandwich Ids.
- Lycengraulis grossidens*, Cuv. Note by GILBERT, P. Washington Ac. ii, p. 163.
- Clupea harengus*, L. Biological observations in Norway: HEINCKE & HENKING, Abh. Deutsch. Seefisch.-Ver. vi, p. 75; *C. sapidissima*, Wils. Note on the habits: R. L. ASCROFT, P. Liverp. biol. Soc. xiv, p. 173; *C. delicatula*, Nordm., *kessleri*, Grimm, and *saposchnikovi*, Grimm. Notes by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 28.
- Aulolepis typus*, Ag. (foss.). Further notes by A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 324, pl. ix, fig. 2.
- Syntegmodus*, g. n., allied to *Albula*: LOOMIS, Palæontogr. xlv, p. 252, for *S. altus*, sp. n. (foss.), id. ibid. p. 253, pl. xxii, fig. 9, Chalk of Kansas.
- Osmeroïdes*, Ag. (foss.). Remarks by LOOMIS, t. c. p. 254.

## PLETHODIDÆ.

- Thryptodus*, g. n., allied to *Plethodus*, A. S. Woodw., LOOMIS, Palæontogr. xlv, p. 229; *P. zitteli* and *rotundus*, spp. nn. (foss.), id. ibid. pp. 234 & 235, pl. xxii, Chalk of Kansas.

*Pseudothryptodus*, g. n., also allied to *Plethodus*: LOOMIS, t. c. p. 225, for *P. intermedius*, sp. n. (foss.), id. ibid. p. 236, pl. xxii, figg. 3-8, Chalk of Kansas.

## CHIROCENTRIDÆ.

*Ichthyodectes*, Cope (foss.). Genus monographed by LOOMIS, Palæontogr. xlv, p. 236, figg., pl. xxiii.

*Portheus*, Cope (foss.). Remarks by LOOMIS, t. c. p. 246.

*Saurodon*, Hays (foss.). Remarks by LOOMIS, t. c. p. 247; *S. pygmaeus*, sp. n., id. ibid. p. 248, pl. xxiii, fig. 10, Chalk of Kansas.

*Saurocephalus*, Harl. (foss.). Genus and species characterized by LOOMIS, t. c. p. 249, pl. xxv.

## ALEPOCEPHALIDÆ.

*Xenodermichthys guentheri*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxii, fig. 2.

*Alepocephalus edentulus*, Alcock, figured by ALCOCK, l. c. fig. 4.

*Leptoderma affine*, Alcock, figured by ALCOCK, l. c. fig. 3.

## HALOSAURIDÆ.

*Halosaurus parvipinnis*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxiii, fig. 1.

*Halosaurichthys nigerrimus*, Alcock, figured by ALCOCK, l. c. fig. 2.

## NOTOPTERIDÆ.

On the air-bladder: T. W. BRIDGE, J. Linn. Soc. xxvii, pp. 503-540, pls. xxxvi & xxxvii.

## MURÆNIDÆ.

O. v. LINSTOW, Zeitschr. Naturw. lxxii, pp. 317-330, figg., summarises our knowledge of the reproduction of *Anguilla vulgaris*.

*Conger vulgaris*, Cuv. On the development: EIGENMANN, Science (2) xii, p. 401.

*Congrellus meeki*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 347, pl. xi, Bay of Tokyo, Japan.

*Lycodontis jordani*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 352, Puerto Rica; *L. parvibranchialis*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 494, pl. xviii, fig. 1, Sandwich Ids.

*Echidna zonata*, sp. n., H. W. FOWLER, t. c. p. 495, pl. xviii, fig. 2, Sandwich Ids.

*Aphthalmichthys caribbeus*, sp. n., GILL & H. M. SMITH, Science (2) xi, p. 974, Porto Rico.

*Dysommopsis mucipara*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxiv, fig. 1.

*Saurenchelys teniola*, Alcock, figured by ALCOCK, l. c. fig. 2.

*Urenchelys*, g. n., for *Anguilla hakeiensis*, J. W. DAVIS (foss.), and *U. anglicus*, sp. n., from the Lower Chalk of Clayton, Sussex: A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 322, pl. ix, fig. 1.

*Megalopharynx*, g. n., allied to *Saccopharynx*, for a deep-sea fish from the Gulf of Guinea: BRAUER, in CHUN, Aus den Tiefen des Weltmeeres p. 521, fig.



## LOPHOBRANCHII.

Remarks on the habits by G. DUNCKER, Abh. Ver. Hamburg xvi, No. 3, 12 pp.

*Syngnathus bucculentus*, Rathke. Note by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 8.

*Hippocampus capensis*, sp. n., BOULENGER, Mar. Invest. S. Afr. No. 8, p. 11, pl. —, fig. 2, Cape of Good Hope; *H. jayakari*, sp. n., id. Ann. Nat. Hist. (7) vi, p. 51, fig., Muscat.

## PLECTOGNATHI.

*Halimochirurgus centriscoides*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxi, fig. 3.

*Monacanthus radiatus*, sp. n., POPTA, Notes Leyden Mus. xxii, p. 126, figg., Malay Archipelago.

*Spheroides greeleyi*, sp. n., GILBERT, P. Washington Ac. ii, p. 176, pl. ix, fig. 4, Coast of Brazil.

*Chilomycterus schoepfi*, Walb. On a specimen from the coast of Nova Scotia: H. PIERS, P. Nova Scotian Inst. x, p. 110.

*Euchilomycterus*, g. n., near *Chilomycterus*, for *E. quadraticatus*, sp. n., WAITE, Rec. Austral. Mus. iii, p. 208, Lord Howe Id.

*Orthogoriscus mola*, L. On the genital organs, and on the variations in the external characters: L. G. ANDERSSON, Ofv. Ak. Forh. 1900, p. 603; G. H. PARKER, Anat. Anz. xvii, pp. 313–316, fig., has a note on the blood vessels of the heart.

*Ranzania makua*, Jenk. Note by H. W. FOWLER, P. Ac. Philad. 1900, p. 514.

## GANOIDEI.

W. A. HILTON, Amer. Natural. xxxiv, pp. 717–727, figg., describes the microscopical structure of the intestine of *Amia calva*.

E. P. ALLIS, Zool. Jahrb. Anat. xiv, pp. 107–134, pl. vi, writes on the pseudobranchial circulation in *Amia calva*.

J. M. PRATHER, Biol. Bull. i, pp. 57–80, pls. i–iii, writes on the early stages in the development of the hypophysis of *Amia calva*.

*Leptolepis nathorsti*, sp. n. (foss.), A. S. WOODWARD, Bih. Svenska Ak. xxv, iv, No. 5, p. 4, pl. —, figg. 2–11, Jurassic of Spitzbergen.

*Protosphyrena*, Leidy (foss.). Revision of the genus by LOOMIS, Palæontogr. xlv, p. 215, figg., pls. xix & xx; *P. obliquidens* and *tenuis*, spp. nn., id. ibid. pp. 225 & 226, Chalk of Kansas.

*Coelodus stantoni*, sp. n. (foss.), WILLISTON, Kansas quart. ix, p. 28, pl. viii, fig. 6, Cretaceous of Kansas.

*Lepidosteus atrox*, Leidy (foss.). Note by EASTMAN, Geol. Mag. (2) Dec. iv, vii, p. 57; *L. atrox*, Leidy, and *simplex*, Leidy (foss.). On remains from the Green Shales of Wyoming: EASTMAN, Bull. Mus. Harvard xxxvi, p. 67, 2 pls.

*Acipenser gueldenstaedtii*, Brandt. On a specimen with abnormal caudal fin: STEINDACHNER, SB. Ak. Wien cviii, i, p. 542.

*Pseudoscaphirhynchus*, g. n., for *Scaphirhynchus fedtschenkoi*, Kessl., NIKOLSKI, Annuaire Mus. St. Petersb. v, p. 257; *P. rossikowi*, sp. n., id. ibid. p. 258, Amu Darya.

*Rhadinichthys monensis*, Egert. (foss.). Note by WELLBURN, Geol. Mag. (2) Dec. iv, vii, p. 260, fig.

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- E. P. ALLIS, Anat. Anz. xviii, pp. 257-289, figg., writes on the pre-maxillary and maxillary bones, and the supposed maxillary and mandibular breathing valves in *Polypterus bichir*, and op. cit. xvii, pp. 433-451, figg., on the lateral sensory canals of the same fish.
- J. S. BUDGETT, P. Z. S. 1900, pp. 430-433, gives an abstract of a paper on some points in the anatomy of *Polypterus*, dealing chiefly with the urogenital organs.
- Polypterus*, Geoffr. Notes on the habits of the two Gambian species, *P. lapradii*, Stdr., and *P. senegalus*, Cuv.: BUDGETT, P. Cambridge Soc. x, p. 236; *P. lapradii*, Stdr. On a half-grown specimen with large external gills: BOULENGER, P. Z. S. 1900, p. 267.
- Sagenodus*, Ow. (foss.). Remarks by WILLISTON, Kansas quart. viii, p. 175; *S. copeanus*, sp. n., id. ibid. p. 178, pls. xxviii, xxxv-xxxvii, Coal Measures of Kansas.
- Coelacanthus lunzensis*, Teller (foss.). Description and figure of various remains: O. M. REIS, Jahrb. geol. Reichsanst. l, p. 187, pls. ix & x.
- Megalichthys*, Ag. (foss.). On its history, systematic position, and structure: E. D. WELLBURN, P. Yorksh. geol. Soc. (2) xiv, pp. 52-71, pls. xiii-xix.
- Holoptychius monilifer*, sp. n. (foss.), A. S. WOODWARD, Bih. Svenska Ak. xxv, iv, No. 5, p. 3, pl. —, fig. 1, Upper Devonian of Spitzbergen.

## DIPNEUSTI.

- A. PERRET, Rev. Scient. (4) xiii, pp. 786-788, reviews our knowledge of the characters and habits of the existing Lung-fishes.
- J. G. KERR, Phil. Trans. cxcii, pp. 299-330, pls. viii-xii, describes the egg and development of *Lepidosiren paradoxa*.
- Lepidosiren paradoxa*, Fitz. On the abnormal character of reproduced limbs and tail: BRINDLEY, P. Cambridge Soc. x, p. 325.
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## ARTHRODIRA.

- Rhynchodus emigratus*, sp. n., F. v. HUENE, N. Jahrb. Min. 1900, i, p. 65, fig., Devonian of Eifel district, Germany.

## OSTRACOPHORI.

- Cephalaspis lornensis*, sp. n., TRAQUAIR, Tr. R. Soc. Edinb. xxxix, p. 591, pl. —, Old Red Sandstone, Oban, Scotland.
- Euphanerops*, g. n., allied to *Cephalaspis*, for *E. longævus*, sp. n., A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 416, pl. x, fig. 1, Upper Devonian of Scaumenac Bay, Canada.
- Drepanaspis gmuedenensis*, Schlüter. Notes by TRAQUAIR, Geol. Mag. (2) Dec. iv, vii, p. 153, figg., who refers it to the *Heterostraci*.

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- Chimæra phantasma*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 338, Japan.

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- CAMPBELL BROWN, Palæontogr. xlii, p. 149, dealing with the structure of the Hybodont Sharks, remarks on their systematic position and on the supposed lines of evolution of the primitive Selachians.
- R. BURCKHARDT, Anat. Anz. xviii, pp. 488-492, figg., remarks on the characters of the Læmargidæ.
- H. C. REDEKE, Tijdschr. Nederland. Dierk. Ver. (2) vi, pp. 284-303, pl. xii, investigates the structure of mucous membrane of the stomach and intestine of Selachians.
- H. C. REDEKE, Anat. Anz. xvii, pp. 146-159, figg., remarks on the digestive tract of Selachians, with reference to the so-called 'Bursa Entiana.'
- R. C. PUNNETT, Phil. Trans. cxcii, pp. 331-352, pl. xiii, has investigated the formation of the pelvic plexus in *Mustelus*, with especial reference to the Nervus collector. Abstract, Zool. Anz. xxiii, pp. 14 & 15.
- R. BURCKHARDT, Ann. Nat. Hist. (7) vi, pp. 558-568, figg., writes on the luminous organs of the Selachians of the family *Spinacidae*.
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- J. BEARD, Anat. Anz. xviii, pp. 359-363, writes on a thymus element of the spiracle in *Raia*.
- H. NEUVILLE, Bull. Soc. Philom. (9) ii, pp. 84-91, writes on the supra-hepatic system of blood-vessels in Selachians.
- P. RITTER has remarks on the species of *Trygon* and *Acanthias* (Berlin, 8vo, 56 pp., 7 pls.).
- F. KALBERLAH, Zeitschr. Naturw. lxxiii, pp. 1-40, fig., pl. i, has a paper on the central nervous system of Selachians.
- G. V. CIACCIO, Mem. Acc. Bologna (5) vii, pp. 213-245, has made observations on the microscopical structure of the electric organ of *Torpedos*. French abstract, Arch. ital. Biol. xxxiii, pp. 51-72, 2 pls.
- S. GARTEN, Abh. Sachs. Ges. xxv, pp. 253-366, 4 pls., has a contribution to the physiology of the electric organ of *Torpedo*.
- S. GARTEN, Arch. Anat. 1900, pp. 133-154, pls. viii & ix, has made experiments on the changes in the ganglion-cells of the electric lobe of *Torpedo* after severance of the nerves arising from it.
- E. WEINLAND, SB. Ges. Munchen xvi, pp. 27-32, writes on the presence of two kinds of gastric juices in Skates of the genus *Raia*.
- J. EMMERT, Arch. mikr. Anat. lvi, pp. 459-490, figg., pl. xx, investigates the early development of *Torpedo marmorata*.
- F. HOCHSTETTER, Morphol. Jahrb. xxix, pp. 141-168, figg., pl. vii, writes on the development of the pericardial and peritoneal regions in *Acanthias vulgaris*.
- P. LAASER, Anat. Anz. xvii, pp. 479-489, figg., has a preliminary communication on the development of the teeth in Selachian embryos.
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- Galeocерdo aduncus*, Ag. (foss.). Tooth figured by A. S. WOODWARD, Ann. Nat. Hist. (7) vi, pl. i, fig. 10.
- Hemipristis serra*, Ag. (foss.). Tooth figured by A. S. WOODWARD, t. c. pl. i, fig. 11.
- Corax curvata*, sp. n. (foss.), WILLISTON, Kansas quart. ix, p. 41, pl. xii, figg. 7 & 8, Cretaceous of Kansas.

- Carcharodon megalodon*, Ag. (foss.). Tooth figured by A. S. WOODWARD, Ann. Nat. Hist. (7) vi, pl. i, fig. 9.
- Odontaspis elegans*, Ag. (foss.). Teeth figured by A. S. WOODWARD, t. c. pl. i, figg. 1-5.
- Oxyrhina hastalis*, Ag. (foss.). Teeth figured by A. S. WOODWARD, t. c. figg. 6-8.
- Alpias vulpes*, Gm. On a specimen from the Firth of Forth: J. STIRTON, Ann. Scott. Nat. Hist. 1900, p. 17, fig.
- Scyllium quagga*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxvii, fig. 1; *S. rugosum*, *planidens*, and *gracilis*, spp. nn. (foss.), WILLISTON, Kansas quart. ix, p. 35, pl. vi, figg. 5-7, Cretaceous of Kansas.
- Hybodus fraasi*, sp. n., CAMPBELL BROWN, Palæontogr. xlv, p. 151, pl. xv, Upper Lias, Holzmaden, Württemberg; *H. lavallei*, sp. n. (foss.), SEGUEZA, Boll. Soc. geol. Ital. xix, p. 474, pl. v, fig. 33, Lias of Cape Castelluccio, Prov. Messina.
- Sphenodus robustidens* and *rectidens*, spp. nn. (foss.), SEGUEZA, t. c. pp. 477 & 478, pl. v, figg. 30 & 31, Lias of Cape Castelluccio, Prov. Messina.
- Deltodus croftoni*, sp. n. (foss.), A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 419, pl. x, fig. 2, Lower Carboniferous of Yorkshire.
- Centroscyllium ornatum*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxv, fig. 1.
- Acanthias*, Risso. A. GRIFFINI, Rend. Acc. Sc. Fis. Mat. Nat. x, has made statistical investigations into the individual variations of young *A. vulgaris* and *blainvillii*.
- Raia asterias*, M. & H. On a monstrous specimen: PELLEGRIN, Bull. Soc. zool. France xxv, p. 106, fig.; *R. meerdervoorti*, Blkr., and *kenojei*, M. & H., redescribed by JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 337; *R. johannis-davisi*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxvii, fig. 2.
- Ptychodus martini* and *anonymus*, spp. nn. (foss.), WILLISTON, Kansas quart. ix, p. 32, pls. x & xi, Cretaceous of Kansas.
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## CYCLOSTOMI.

- M. FÜRBRINGER, Morphol. Jahrb. xxviii, pp. 478-482, has further remarks on the systematic position of the *Myxinidae* for which he proposes a special division of the Craniota under the name of *Monosolenia* as opposed to *Disolenia* (*Petromyzontes*) and *Trisolenia* (*Gnathostomata*).
- W. H. GASKELL, J. Anat. Physiol. norm. path. (2) xiv, pp. 465-586, figg., pls. lvi & lvii, continues his study of *Ammocoetes* with reference to the origin of Vertebrates.
- C. W. GREENE, Amer. Journ. Physiol. iii, pp. 366-382, figg., deals with the anatomy and physiology of the caudal heart of *Bdellostoma* (*Polistotrema*) *stouti*.
- E. GIACOMINI, Verh. Anat. Ges. 1900, pp. 44-52, figg., writes on the pancreas of the *Petromyzontidae*.



- E. BUFFA, Arch. ital. Biol. xxxiii, pp. 177-185, gives a digest of his experiments on the toxicity of the blood of *Petromyzon planeri*.
- B. DEAN, Mem. N. York Ac. ii, pp. 33-46, pl. ii, has a memoir on the egg of *Myxine glutinosa*.
- A. S. JENSEN, Vid. Medd. 1900, pp. 1-13, pl. i, describes and figures the egg of *Myxine glutinosa*.
- E. BATAILLON, C.R. Ac. Sci. cxxx, pp. 1201 & 1202, remarks on the formation of twin larvæ from the eggs of *Petromyzon planeri*.
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- Petromyzon planeri*, L. E. FESTA, Boll. Mus. Torino xv, No. 367, records a case of albinism (icterism); *P. wilderi*, Gage. On the nesting habits: R. T. YOUNG & L. J. COLE, Amer. Natural. xxxiv, p. 617.
- Palæospondylus*, Traq., is regarded by GRAHAM KERR, P. Cambridge Soc. x, p. 298, as possibly a young Dipnoan, or the young of some form closely allied to the Dipnoi.
- B. DEAN, Mem. N. York Ac. ii, p. 1, pl. i, has further notes on and figures of *Palæospondylus gunni*, Traq., and discusses the views which have been held by various authors as to its relationships.

## LEPTOCARDII.

- E. BURCHARDT, Jena. Zeitschr. xxxiv, pp. 719-832, pls. xviii-xxvi, has a paper on the structure of *Branchiostoma lanceolatum*, followed by a full bibliographical index to all publications on the subject.
- H. JOSEPH, Arb. Inst. Wien xii, pp. 99-132, figg., 1 pl., investigates some points in the histology of the Amphioxus.
- E. W. MACBRIDE, Quart. J. Micr. Sci. xliii, pp. 351-366, pl. xvii, has further remarks on the development of the Amphioxus.
- Branchiostoma belcheri*, Gray. Recorded from Singapore by F. P. BEDFORD, Nature lxi, p. 444.

## VI. TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.R.S.

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### INTRODUCTION.

THE continuation of SEELIGER's section of "Bronn" is an important contribution to the literature of the Tunicata. DAMAS, WILLEY, and SELYS-LONGCHAMPS give us interesting studies of the development and growth in complication of the Ascidian's characteristic organ the branchial sac. HARTMEYER, MICHAELSEN, SLUITER, and RITTER have made important additions to our knowledge of speciography; while METCALF's "Notes" throw welcome light upon several vexed points in morphology.

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2. DAMAS, D. Étude du sac branchial chez *Ciona intestinalis* (L.). Arch. Biol. xvii, pp. 1-32, pls. i & ii.  
— [See also SELYS-LONGCHAMPS (18).]
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11. METCALF, M. M. Notes on the Morphology of Tunicata. Zool. Jahrb. Anat. xiii, pp. 495-602, pls. 34-40.
12. MICHAELSEN, W. Die Holosomen Ascidien des Magalhaensisch-süd-georgischen Gebietes. Zoologica, xii, Heft 31, pp. 1-148, pls. i-iii.
13. PIZON, A. Études biologiques sur les Tuniciers Coloniaux fixés, 2<sup>me</sup> partie. Bull. Soc. Ouest France x, Fasc. i-ii, pp. 1-72, pls. i & ii.
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15. RITTER, W. E. Some Ascidians from Puget Sound, collections of 1896. Ann. N. York Ac. xii, No. 14, pp. 589-616, pls. xviii-xx.
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17. —. Einige Bemerkungen über den Bau des Ruderschwanzes der Appendicularien. Zeitschr. wiss. Zool. lxvii, pp. 361-400, Taf. xxi-xxiii.

18. SELYS LONGCHAMPS, M. DE, & DAMAS, D. Recherches sur le développement post-embryonnaire et l'anatomie définitive de *Molgula ampuloides*. Arch. Biol. xvii, pp. 385-488, pls. xiii-xv.
19. —. Développement du cœur, du péricarde et des épicarques chez *Ciona intestinalis* (communication préliminaire). Bull. Ac. Belgique, Juin 1900, No. 6, pp. 432-441.  
A preliminary notice of (18).
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21. TODARO, F. La moltiplicazione delle sfere di segmentazione dell' ovo nelle Salpe. Anat. Anz. xviii, Ergzgsht. Verh. Anat. Ges. 14 Vers., pp. 194-202.
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23. WILLEY, A. On the Protostigmata of *Molgula manhattensis* (De Kay). Quart. J. Micr. Sci. xlv, No. 173, pp. 141-160, pl. 9.

## II. SUBJECT-INDEX.

### A. ANATOMY.

CAULLERY describes two species of Clavelinids from the Paris Museum which although presenting the structure of *Clavelina* have the whole body of the Ascidiuozoids completely immersed in a massive common test. He places them in a new genus *Synclavella*, and cites them as an additional reason for abandoning Milne-Edwards' group the Social Ascidiuans.

SEELIGER (17) has some new observations on the structure of the tail in Appendicularians, and does not find that the segmentation of the nervous system completely corresponds with that of the muscle bands. He does not consider that there is true segmentation like that of *Amphioxus* nor that there is evidence for the view that Tunicata are derived from segmented ancestors. The connection with the Vertebrata must therefore, he argues, have been very far back.

DELLA VALLE (3) describes movements of contraction in the ampullæ of the ectodermal processes of *Diplosoma*.

MICHAELSEN now gives us a fuller account of the Ascidiuans from the Magellan Straits and South Georgia region he described briefly a few years ago. He also adds a few new species, breaks up several old species into varieties, or forms, and constitutes several new generic groups.

The last published section of SEELIGER's memoir on the Tunicata in "Bronn" deals with the branchial sac and its associated organs the endostyle, the dorsal lamina, the peripharyngeal bands, the dorsal tubercle, and the sense-organs.

HARTMEYER in describing one of his new Ascidiuans from Ternate discusses very fully the relations of the genera *Ascidia* and *Corella* and gives a classification of the family Ascidiidæ.

METCALF gives a very full description of the ganglion and neural gland and associated parts of *Ciona intestinalis* and many other Ascidiuans to compare with the gland he found in *Salpa*. He shows that the secretion



of the neural gland is formed by the disintegration of cells proliferated from the endothelium of the gland. He demonstrates the innervation of the ciliated funnel by a large nerve from the ganglion in *Boltenia*. The function of the neural gland is regarded as quite unknown. *Octacnemus* he considers as belonging to the Clavelinidæ rather than the Salpidæ. He describes a new species of *Bostrichobanchus* and clears up some allied species of Molgulidæ. The abbreviated development of a *Molgula* is described leading to the suppression of the larval stage; and many other points in anatomy and histology are discussed.

PIZON deals with the history of the colony in the Botryllidæ and the Distomidæ, the formation of the oozoid and of blastozooids and their duration and retrogression, the mechanism of circulation and other points in connection with the colonial life.

## B. EMBRYOLOGY.

WILLEY gives us some interesting observations on the development of the stigmata in the branchial sac of Ascidians. In *Clavelina* and other forms the stigmata arise each by separate perforations of the pharyngeal wall. In Ascidiidæ two pairs of primary stigmata are formed. These increase to six pairs which become subdivided to form the secondary and tertiary stigmata of the adult. *Botryllus* is intermediate in some respects. Willey describes the formation of the stigmata in *Molgula manhattensis* and compares it with the process described in other types. He comes to the conclusion that the formation of protostigmata by abstriction is probably primitive, but no longer occurs in *Botryllus*, while the subdivision of the protostigmata has dropped out of the ontogeny of *Clavelina*.

M. DE SELYS LONGCHAMPS and DAMAS in a detailed account of the post-embryonic development of *Molgula ampulloides* deal chiefly with the formation and modification of the protostigmata in the branchial sac, and with the development and structure of the gonad. They give a good account of the formation of the spiral stigmata and a full description of the adult branchial sac. They show the persistence in the adult of a larval sense organ, the pigmented otolith, in the hypophysial gland. The authors had a short preliminary communication under the same title in Bull. Ac. Belgique for June 1900.

DAMAS in his paper on *Ciona* gives us a careful study of the detailed arrangement of vessels of different sizes in the branchial sac, and of the distribution of the muscle bundles in the wall of the sac. He also deals with the development of the stigmata and other allied matters.

DE SELYS-LONGCHAMPS in his account of the development of the pericardium and heart and epicardium in *Ciona* establishes in the main the results of Willey and of Damas. The epicardium and the pericardium arise independently at very different periods in *Ciona*, unlike other forms that have been examined, and the rudiment of the pericardium is not formed by constriction from the bottom of the right procardium. In fact there is no procardium in *Ciona*, as according to this author the cardio-pericardiac complex is formed quite independently of the epicardia and at a much earlier stage in the life-history.

TODARO, dealing with the segmentation of the egg of *Salpa*, describes the remarkable relations between the nutrient (lecithin) cells and the true blastomeres and shows how the former nourish and support the latter for a long period before they become germ layers.

## C. GEOGRAPHICAL DISTRIBUTION.

LOHMANN gives an account of the Arctic species of Appendiculariidae in connection with the German North Polar Expedition of 1898. He discusses 4 species, *Fritillaria borealis*, *Oikopleura vanhoeffeni*, *O. labradoriensis* and *O. parva*.

SLUITER describes a number of new species from the Pacific obtained in Schauinsland's expedition. Twenty-five out of the 36 species are new to science.

HERDMAN gives a list of 44 species of Tunicata which he identified at Naples in March and April 1900.

RITTER describes 15 species of Ascidians from Puget Sound, of which 7 are new to science.

HARTMEYER describes 5 species of simple Ascidians from Ternate of which 4 are new species and one a new genus and the type of a new subfamily the Corellascidiinae.

RANKIN enumerates 26 species of Tunicata found in the neighbourhood of Millport in the Clyde sea-area. Several of these are new to the locality and 3 are new to science.

## III. SYSTEMATIC.

## LARVACEA.

*Fritillaria gracilis*, RANKIN, p. 43, n. sp.

## ASCIDIACEA.

## CLAVELINIDÆ.

*Synclavella*, n. gen., CAULLERY, p. 1420, for *S. lessoni*, *australis*, n. spp.

## ASCIDIIDÆ.

*Corellascidiinae*, nov. subfam., HARTMEYER, p. 241.

*Corellascidia*, n. gen., p. 235 for *C. herdmani*, n. sp., p. 236, HARTMEYER.

## CYNTHIIDÆ.

*Cynthia superba*, p. 590, *deani*, p. 592, *macrosiphonus*, p. 597, *erecta*, p. 598, RITTER; *C. stubenrauchii*, p. 102, *pæssleri*, p. 106, MICHAELSEN : n. spp.

*Microcosmus ternatanus*, HARTMEYER, p. 4, n. sp.

## STYELIDÆ.

*Styela stimpsoni*, RITTER, p. 602; *S. depressa*, HARTMEYER, p. 6; *S. curtzei*, MICHAELSEN, p. 94 : n. spp.

*Polycarpa aterrima*, n. sp., HARTMEYER, p. 8.

## POLYSTYELIDÆ.

*Allæocarpa*, n. gen., MICHAELSEN, p. 25.

*A. zschawi*, p. 32, *emilioni*s, p. 35, *intermedia*, p. 39, *bridgesi*, p. 41,  
MICHAELSEN, n. spp.

*Gynandrocarpa*, n. gen., MICHAELSEN, p. 29.

*Polyzoa gordiana*, p. 49, *falclandica*, p. 52, *lennoxensis*, p. 56, MICHAELSEN,  
n. spp.

## MOLGULIDÆ.

*Molgula kophameli*, p. 125, *pulchra*, p. 128, *georgiana*, p. 132, MICHAELSEN,  
n. spp.

*Paramolgula guttula*, p. 135, *patagonica*, p. 141, MICHAELSEN, n. spp.

*Bostrichobranckus molguloides*, n. sp., METCALF, p. 586.

## DISTOMIDÆ.

*Distoma molle*, p. 605, *lobata*, p. 606, RITTER, n. spp.

## POLYCLINIDÆ.

*Glossophorum variabile*, RANKIN, p. 50, n. sp.

*Psammaphidium molle*, RANKIN, p. 51, n. sp.

# VII. MOLLUSCA.

BY

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Assisted by E. A. SMITH, F.Z.S., and G. C. CRICK, F.G.S.

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## INTRODUCTION.

THE stream of literature bearing on the Mollusca appears to have flowed as steadily during 1900 as in past years.

We have to chronicle two works dealing with the Mollusca in general, namely an English and revised edition of KORSCHOLT & HEIDER'S (272) 'Text-book of Embryology,' and a new edition of LANG'S (275) 'Lehrbuch,' written by HESCHELER. TRYON'S Manual (529) has regularly appeared, PILSBRY having dealt with the Australasian *Bulimulidæ* and with *Amphidromus*, which he refers to the *Helicidæ*. Nine parts of the 'Conchylien-Cabinet' of MARTINI & CHEMNITZ (311) have been issued, relating to the *Eulimidæ*, *Buliminidæ*, *Auriculidæ*, and Zonitoid snails: they are of



somewhat unequal merit, and we note that CLESSIN has bestowed the same specific name on two apparently distinct species within seven pages. MARTENS (309) has now practically completed the molluscan portion of the 'Biologia Centrali-Americana' and has commenced some supplemental notes, rendered the more necessary by the fact that ten years have elapsed since the work was commenced. One part of the 'Atlas' of HIDALGO's (224) 'Obras Malacologicas'—illustrating Philippine Island landshells—has appeared. The further portion of DALL's (121) 'Tertiary Fauna of Florida' contains, as of old, a large amount of systematic detail which is of importance to students of recent molluscs; the present part deals with a portion of the Pelecypoda: here we may also note the further instalment of SACCO's (452) work on the tertiary fossils of Piedmont and Liguria. TAYLOR (521) has issued the completion of the first volume of his study of the British land and freshwater Mollusca; we trust the systematic portion will shortly appear.

Amongst the works relating to non-marine molluscs will be found a number of papers by GUDE (200, 201, 206) and PILSBRY (388, &c.) dealing with Japanese shells, as also minor writings by EHLMANN (163) and MOELLENDORFF (334) relating to the same fauna. The authors appear to have been engaged in describing collections formed by the same person with the result—as might be expected—that several species have received more than one name, and the future student of Japanese shells will have no light task before him. ANDREAE (12) and STURANY (506) have dealt with interesting collections from Central Asia. A number of forms from Indo-China have been described by BAVAY & DAUTZENBERG (31), the former (30) also pointing out a link between the faunas of North America and Asia. Several papers relating to Island faunas may be grouped together: MARTENS (305) on Sumatra; SMITH (481) on Christmas Island; DALL (124) on the Galapagos and Cocos Islands; PILSBRY (384) on the Bermudas; and SYKES (509) on the Hawaiian Islands. CORSI (105) has given a review of the fauna of Uruguay, and many brief papers on the North American fauna have appeared. Perhaps the most important of the systematic studies is that of SIMPSON (465) on the *Unionidae*, he having dealt with this exceedingly difficult family with painstaking care and skill; DROUET (157A), approaching the subject from a very different specific point of view, has recorded fifty-one species from the 'Basin of the Seine,' fortunately, however, only a few are described as new. An interesting discovery has been made by PILSBRY (399), who has described a new 'slug-like genus of dart-bearing *Helicidae*' from Mexico, under the new generic name of *Metostrakon*. Several other papers have been written on slugs, notably by BABOR (20, 21), COLLINGE (99–104), and SIMROTH (467); while PFEIFFER (380) has issued a study of *Triboniophorus*.

DYBOWSKI (160, 162) has written some papers relating to the fauna of Lake Baikal, perhaps the most interesting feature being the discovery in that lake of a species of *Ancylodoris*.

Several works by BERGH (38–41), relating to marine molluscs, may be grouped together, firstly a further fascicule of the 'Campagnes Scientifiques' dealing with Nudibranchs and *Marsenia*, secondly accounts of the Opisthobranchs of the Schauinsland Expedition and of the Nudibranchs of the Ingolf Expedition, thirdly a further portion of SEMPER's well-known 'Reisen.' DAUTZENBERG (135) has written an account of the molluscs collected during the cruise of the 'Chazalie' on both sides of the Atlantic. DALL (122, 123) has dealt with the *Cardiidae* and *Tellinidae* of North America; VERRILL (536), separately, and with BUSH (537), has added to our knowledge of the fauna of the Bermudas; CORSI (105) has catalogued the molluscs of Uruguay; and IHERING (239) has given a systematic account of the South American *Mytilidae*. GATLIFF and PRITCHARD, both separately and in conjunction (180, 181, 425–430) have worked on the fauna of Victoria and

several interesting notes on Australasian shells will be found in the writings of HEDLEY (218-220). We may also note the paper of MELVILL & STANDEN (330) relating to Franz Josef Land, the fauna of Oran by PALLARY (369), and NICHOLS' (352) list of the Irish Mollusca. A synopsis of the Eegopsis Cephalopods has been written by PFEFFER (379), in which the new names somewhat outnumber the descriptions. *Bathysciadium* is an interesting new genus of Limpets, described by DAUTZENBERG & FISCHER (142), with a note on its anatomy by PELSENER (377).

Turning to the more strictly anatomical works we may first note a series of papers by CARAZZI (79-82), GEORGEVITCH (184), and MAZZARELLI (320-323) dealing with the embryology of *Aplysia*; while BOTTAZZI & ENRIQUES (61) have examined the nervous system of *Aplysia* and some Cephalopods. The development of the last named and *Planorbis* has been, respectively, studied by FAUSSEK (167) and HOLMES (234). LINVILLE (280) has written on the maturation and fertilization of Gastropods, CAMUS (75, 76) on the blood of snails, and TAUBER (517) on the morphology of the Stylommato-phora. A detailed account of the anatomy of some Asiatic Helicoids has been given by WIEGMANN (559). HESSE (223) has written on the eyes of Molluscs, DREW (155-157) has dealt with the anatomy of *Yoldia* and issued some notes on locomotion in *Solenomya* and its allies, GUIART (207) has put forward a classification of the Opisthobranchs, while the growth and development of the shell have attracted STEMPEL (500).

The Recorders have been considering the best means of breaking up the somewhat lengthy paragraphs which now appear under the heading 'Geological,' so that students might more speedily and easily find that which they desire: tentatively the first large group of 'Tertiary' has been divided geographically by continents, and criticisms or suggestions would be welcomed.

Inasmuch as an index-volume to the 'Record' is in preparation, the present opportunity has been taken to include as many genera and sections, omitted in past years, as the Recorders are aware of, but no such names issued prior to Scudder's 'Nomenclator' have been here given. In the course of this work a few papers—now given in a supplemental list of titles—and certain systematic details were detected, which appear to have previously escaped the notice of Recorders. Students are warned that any reference to a title numbered from 576 to 588, relates to the publications of past years; where such systematic details are now given, the references have the year in which the omission occurred added in square brackets.

In conclusion the Recorders desire to repeat their protest against the practice of issuing new genera and species without any distinguishing mark, or with only an inadequate one (such as "mihi"); while authors persist in this course errors and omissions are bound to exist in nearly every volume of the 'Zoological Record.'

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— [See also KENNARD & WOODWARD (259).]
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## II. BIOLOGY.

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## 8. NERVOUS SYSTEM.

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## 9. SENSORY SYSTEM.

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## B.—DISTRIBUTION.

## GEOGRAPHICAL.

N.B.—The numbers in brackets refer to the "Titles." A reference is thus given to each memoir containing any notice affecting the Molluscan fauna of the several geographical divisions here adopted. Synonymic notes and changes of systematic position are, however, not noticed here. References to minor notes, which are not included in the List of Titles, but which contain faunistic facts of any value, are given to the work direct.

NON-MARINE MOLLUSCA. [For *Marine* see p. 43.]

## a. PALÆARCTIC ZONE.

Supplement to catalogue of Norman collection; NORMAN (357).

1. *Septentrional Region.*

British Isles:—Introductory portion of account of fauna continued; TAYLOR (521): Popular Notes; PLANT (422): Notes on some land and freshwater shells; ADAMS (3).

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Norway:—Land molluscs from Lyngor; STRAND (504).

Denmark:—*Assiminea grayana* in Jutland; SELL (461): Freshwater Mollusca; JOHANSEN (247).—Copenhagen: Freshwater shells from near; SELL (460).

Germany:—*Helix candidula* at Huy; LAESECKE (274): Freshwater shells from Stuhmer Lakes; SELIGO (459): List of slugs found in the neighbourhood of Graz; BABOR (20): Descriptive list of land and freshwater mollusca; GOLDFUSS (193): N. spp. of *Anodonta* and *Unio*; SCHRÖDER (585).—Schweinfurt: Fauna; MEINEL (324).—Schleswig: Land and freshwater shells; MERKEL, Jahresber. Schlesisch. Ges. lxxvii, Zool.-Bot. section, p. 3.—Brunswick: Occurrence of *Xerophila caperata*; KOCH, Jahresber. Ver. Braunschweig xi, p. 203.—Wurtemberg: Land and Freshwater shells; GEYER (187): Variation of *Anodonta cygnea*; BUCHNER (70).

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French Pyrenees:—Freshwater shells; GINESTE, Bull. Soc. malac. France ii, p. 177 [1885].

Lower Pyrenees:—N. spp. of *Helix*; FAGOT, Bull. Soc. malac. France ii, pp. 273, 275 [1885].

Switzerland:—Fauna of Vierwaldstättersees, with *Pisidium clessini*, n. sp.; SURBECK (507): *Helix arinophilopsis*, n. sp.; VILLESERRE, Bull. Soc. malac. France ii, p. 15 [1885].—Fauna of Alpine Lakes; ZSCHOKKE (575).—Lake of Zurich: N. spp. of *Anodonta* and *Unio*; SERVAIN, Bull. Soc. malac. France ii, pp. 325–351 [1885].

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Portugal:—N. spp. of *Unio*; CASTRO, Bull. Soc. malac. France ii, pp. 278–292 [1885].

Central Italy:—Notes on land shells; MARTENS (306).

Roumania:—Land and freshwater shells; JAQUET (246).

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Dalmatia:—*Amalia dalmatina*, n. sp.; SIMROTH (467): N. spp. of *Clau-silia*; LETOURNEUX, Bull. Soc. malac. France ii, pp. 198 & 199 [1885].

Island of Capri:—List of extramarine species, with *Helix cerisi*, n. sp., BELLINI (36).

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Persia:—*Planorbis persicus*, n. sp.; ANCEY (10).

N. Africa:—Notes on land shells; PALLARY, C.R. Ass. France 1899, pt. 1, p. 263.

Southwest Morocco:—Land shells, with n. spp. of *Helix*; MARTENS (307).

## 3. Central Asiatic Region.

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4. *Chinese Region.*

China and Central Asia:—Land and freshwater shells with notes, several species figured, and n. spp. of *Buliminus*, *Cathaica*, *Corbicula*, *Metodiontia*, *Planorbis*, *Platypetatus*, *Plectotropis*, *Pupopsis* (n. gen.), *Satsuma* (?), *Stilpnodiscus*, *Unio*, and *Valvata*; STURANY (506).

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Bonin Is.:—Fauna; ANCEY (7): Note on *Eulota mandarina*; GUDE (201).

6. *Atlantidean Region.*

Azores:—*Buliminus* (*Napæus*) *simrothi*, n. sp.; KOBELT in MARTINI & CHEMNITZ (311): Landshells; MILNE-EDWARDS, Bull. Soc. malac. France ii, p. 313 [1885].

Madeira:—Supplement to catalogue of Norman collection; NORMAN (357).

Canary Islands:—Note on two land shells; GUDE (202).

## b. PALEOTROPICAL AFRICAN ZONE.

7. *Central African Region.*

Central Africa:—New species of *Limicolaria*; GRANDIDIER, Bull. Soc. malac. France ii, pp. 157–161 [1885].

German East Africa:—New species of *Achatina*, *Buliminus*, and *Helix* (*Phasis*); MARTENS (301): New species of *Ennea*, *Helix*, and *Macrochlamys*; MARTENS (303).

Bagamoyo:—*Unio ledoulxianus*, n. sp.; CHARMES, Bull. Soc. malac. France ii, p. 173 [1885].

Congo Free State:—New species of *Ganomidos*, *Melania*, and *Perideriopsis*; DUPUIS & PUTZEYS (159).

### 8. West African Region.

[None.]

### 9. South African Region.

S. Africa:—Notes on slugs, with n. spp. of *Amalia*, *Apera*, and *Oopelta*; COLLINGE (104).

Transvaal:—*Achatina zebrula*, n. sp.; MARTENS (301).

Delagoa:—Land shells; BUGNION, Bull. Soc. Vaudoise xxxv, p. 278.

### 10. Malagasy Region.

Madagascar:—*Clavator vayssierei*, n. sp.; ANCEY (6): *Clavator placostyloides*, n. sp.; KOBELT (266): *Acroptychia pyramidalis*, n. sp.; SYKES (513).

Mayotte:—*Pachnodus fagotianus*, n. sp.; ANCEY, Bull. Soc. malac. France ii, p. 144 [1885].

### 11. Afro-Arabian Region.

Sokotra:—Notes on Fauna; ANCEY, Bull. Soc. malac. France ii, p. 147 [1885].

[? Sokotra]:—*Bonnanius bouvieri*, n. gen. and sp.; JOUSSEAUME (252).

## c. PALÆOTROPICAL ORIENTAL ZONE.

### 12. Indian Region.

India:—*Nanina* (*Xestina*) *theobaldiana*, n. sp.; KOBELT in MARTINI & CHEMNITZ (311).

Ceylon:—*Acarus polei*, n. sp.; COLLETT (96).

### 13. Indo-Chinese Region.

Assam:—*Sesara harmeri*, n. sp.; GUDE (203): *Spiraculum assamense*, n. sp.; FULTON (178).

Annam:—New species of *Amphidromus*; MOELLENDORFF (333): New species of *Amphidromus*, *Camienella*, *Diplommantina*, *Ennea*, *Georissa*, *Hemiplecta*, *Hypselostoma*, *Kaliella*, *Lagochilus*, *Leptopoma*, *Otesia*, *Plectotropis*, and *Streptaris*; MOELLENDORFF (335): *Unio fruhstorferi*, n. sp.; DAUTZENBERG (138).

Tonkin:—New species of *Alycaeus*, *Buliminus*, *Clausilia*, *Cremnoconchus*, *Helix*, *Lithoglyphus*, *Macrochlamys*, *Melania*, and *Stenothyra*; BAVAY & DAUTZENBERG (31): *Plectopylis francoisi*, n. sp.; FISCHER (172): *Plectopylis lepida*, n. sp.; GUDE (205).

Penang:—*Vivipara penangensis*, n. sp.; MARTENS (305).

14. *Indo-Malay Region.*

Sumatra:—*Atopos* (*Padangia*, n. subgen.) *schildii*, n. sp.; BABOR (21): Land and freshwater shells, with n. spp. of *Alycæus*, *Amphidromus*, *Anodonta*, *Corbicula*, *Cyclophorus*, *Macrochlamys*, *Melania*, *Pupina*, and *Unio*; MARTENS (305).

Borneo:—List of eighteen species from Kina Balu; SMITH (478): *Leptopoma* (*Trocholeptopoma*) *mitchella*, n. sp.; SMITH (474): Shells from Mount Kina Balu; HANITSCH (215).

Christmas Island:—Terrestrial fauna, with figures of all the species (*Assiminea andrewsiana*, n. sp.); SMITH (481).

15. *Philippine Region.*

Philippine Islands:—Illustrations of land shells; HIDALGO (224).

## d. AUSTRALIAN ZONE.

16. *Austro-Malayan Region.*

Celebes:—Notes on fauna; SIMROTH (471).

17. *Australian Region.*

Australia:—Notes on *Pupidæ*; PILSBRY (390).

Queensland:—*Diplommatina oreadis*, n. sp.; HEDLEY (220): *Petterdiana thaanumi*, n. sp.; PILSBRY (408).

Tasmania:—Shells in Tasmanian Museum; LODDER (284).

18. *Austro-Polynesian Region.*

Mid-Pacific:—Genesis of land fauna; PILSBRY (397).

New Hebrides:—*Veronicella brunnea*, n. sp.; COLLINGE (99): *Placostylus heterostylus*, n. sp.; PILSBRY in TRYON (529): *Cyrena ingens*, n. sp.; DAUTZENBERG (137):

New Caledonia:—New species of *Bulinus* and *Helix*; EUTHYME, Bull. Soc. malac. France ii, pp. 242–257 [1885].

Loyalty Is.:—*Veronicella willeyi*, n. sp.; COLLINGE (99).

Fiji Islands:—*Veronicella gilsoni*, n. sp.; COLLINGE (102).

19. *Polynesian Region.*

Polynesia:—Notes on *Pupidæ*; PILSBRY (391).

Hawaiian Islands:—Non-marine fauna, with n. spp. of *Achatinella*, *Ancylus*, *Auriculella*, *Leptachatina*, *Perdicella*, *Succinea*, and *Tornatellina*; SYKES (509).

Caroline Islands:—Non-marine Mollusca, with n. spp. of *Charopa*, *Endodonta*, *Eulota*, *Flammulina*, *Georissa*, *Opeas*, *Quadrasiella*, *Tornatellina*, and *Vertigo*; MOELLENDORFF (339).

Mariannes:—Non-marine fauna; MOELLENDORFF (339).

Pelews:—Non-marine fauna; MOELLENDORFF (339).

20. *Neozealanian Region.*

Norfolk I.:—Non-marine Mollusca, with n. spp. of *Fretum*, *Medyla*, *Microcystis*, *Omphalotropis*, *Paludestrina*, *Sitala*, *Trochonanina*, and *Vertigo*; SYKES (512).

Phillip I.:—Non-marine Mollusca, with *Fretum grayi*, n. sp.; SYKES (512).

## e. NEANTARCTIC ZONE.

21. *Patagonian Region.*

Patagonia:—*Pyramidula patagonica*, sub-fossil, n. sp.; SUTER (508).

Uruguay:—Review of fauna; CORSI (105): Occurrence of *Strophocheilus globosus*; PILSBRY (389).

22. *Chilian Region.*

[None.]

## f. NEOTROPICAL ZONE.

23. *Peruvian Region.*

Peru:—Notes on land shells, with n. spp. of *Bulimulus* and *Polygyratia*; PILSBRY (389): *Clausilia granulosa*, n. sp.; SYKES (513).

Galapagos:—Fauna, with n. spp. of *Bulimulus*, *Endodonta*, and *Vitrea*; DALL (124).

24. *Colombian Region.*

Venezuela:—New species of *Euritus* and *Nenia*; JOUSSEAUME (252).—Orinoco River: *Glabilir falsus*, n. sp.; SIMPSON (465).

Ecuador:—New species of *Nenia* and *Rhodea*; JOUSSEAUME (252): *Despaena* (*Chersodespaena*, n. subgen.) *cinnamomea*, n. sp.; SYKES (513): *Glandina equatoria*, n. sp.; DA COSTA (120).

U. S. of Colombia:—*Glandina floccata*, n. sp.; DA COSTA (120): *Plecochilus dalmasi*, n. sp.; DAUTZENBERG (135): New species of *Nenia* and *Rhodea*; JOUSSEAUME (252).

25. *Brazilian Region.*

Brazil:—Land shells, with n. spp. of *Pupa*, *Pyramidula*, and *Streptaxis*; SUTER (508): New species of *Psadara* and *Solaropsis*; IHERING (241): *Strophocheilus pilsbryi*, n. sp.; IHERING in PILSBRY (389): Note on land shells, with n. spp. of *Happia*, *Helicina*, and *Strophocheilus*; PILSBRY (389): *Bulimulus dukinfieldi*, n. sp.; MELVILL (325).

Bolivia:—*Pisidium boliviense*, n. sp.; STURANY (29): *Eurytus couturesi*, n. sp.; ANCEY (8).

26. *Mexican Region.*

Mexico:—Land and freshwater shells, with n. spp. of *Chondropoma* and *Unio*; PILSBRY (407): *Metostreon mimia*, n. gen. and sp.; PILSBRY (399): New species of *Anodonta* and *Sphaerium*; MARTENS (309).



New Mexico:—*Zonitoides neomexicanus*, n. sp.; PILSBRY (404): Land shells from rejectamenta of Rivers; PILSBRY (411): Note on shells from Raton; PILSBRY (418): Mollusca from Sandia Mts. and Las Vegas; PILSBRY & COCKERELL (419).

Panama:—New species of *Glandina* and *Streptostylus*; DA COSTA (120).

Costa Rica:—*Cyclophorus underwoodi*, n. sp.; DA COSTA (120): *Bulinus inusitatus*, n. sp.; FULTON (178): New species of *Eupera*, *Melampus*, and *Sphaerium*; MARTENS (309).

Cocos Is., Costa Rica:—Fauna, with n. spp. of *Guppya*, *Leptinaria*, and *Vertigo*; DALL (124).

Honduras:—*Nephronaias reticulatus*, n. sp.; SIMPSON (464).

Guatemala:—*Glandina iheringi*, n. sp.; PILSBRY (410): *Quadrula guatemalensis*, n. sp.; SIMPSON (464): New species of *Anodonta* and *Unio*; MARTENS (309).

Mosquito Coast:—Shell collecting notes; FLUCK, *Nautilus* xiv, p. 94.

## 27. Caribbean Region.

Cuba:—*Unio proclinatus*, n. sp.; MARTENS (309).

Bahamas:—*Cerion stevensoni*, n. sp.; DALL (130).

## g. NEARCTIC ZONE.

## 28. American Region.

United States:—Review of *Pupidae*, with *Vertigo columbiana*, n. sp.; PILSBRY & VANATTA (421): Illustrations of unfigured *Unionidae*, with n. spp. of *Lampsilis*, *Pleurobema*, *Ptychobranhus* (n. gen.), and *Quadrula*; SIMPSON (464): Distribution of *Unionidae*; SIMPSON (466).—Great Smoky Mountains: Note on fauna; FERRISS (170): Review of fauna, with n. spp. of *Gastrodonta*, *Punctum*, and *Vitrea*, and new varieties; PILSBRY (387).—Red River: Freshwater shells; FRIERSON (175).

Alabama:—*Unio hagleri*, n. sp.; FRIERSON (174).—Arkansas and Choctaw Nation: *Zonitidae*; PILSBRY (401).—Arkansas: *Lampsilis simpsoni*, n. sp.; FERRISS (169): Land shells with *Polygyra pilsbryi*, n. sp.; FERRISS (168): Notes on land and freshwater shells; PILSBRY (393).—Western Florida: Land shells; JOHNSON (250).—Florida: Occurrence of *Polygyra auriculata*; PILSBRY, *Nautilus* xiii, p. 118.—Georgia: *Unio kingii*, n. sp.; WRIGHT (571).—Illinois: Revision of *Physa*; BAKER (23).—Indiana: On the fauna; CALL (577): Detailed account of fauna; CALL (74): Notes on some shells; CALL (578).—Kentucky: Collection of land and freshwater shells; PRICE (424).—Maine: Land shells of Kennebunkport; CLAPP (88): Land and freshwater shells from; NYLANDER (358).—Michigan: *Pisidium imbecille*, n. sp.; STERKI (501).—Michigan, Illinois, Kentucky, and Iowa: *Pisidium peraltum*, n. sp.; STERKI (501).—Minnesota: Shells from Heron and Eagle Lakes; STEARNS (489).—Montana: *Pyramidula elrodi*, n. sp.; PILSBRY (413).—New Jersey: Land shells of Cape May; PILSBRY (416).—New York: Shells near Rochester; BAKER (24).—Rhode Island: Freshwater shells; BAKER (22).—North Carolina: *Philomycus secretus*, n. sp.; COCKERELL (93).—Texas: Note on cave fauna; EIGENMANN, *P. Amer.* Ass. xlv, p. 229: Several land shells; FERRISS (168): *Helicodiscus eigenmanni*, n. sp.; PILSBRY (413).

Bermudas:—Land shells, with critical notes, and figures of several spp.; PILSBRY (384).

29. *Californian Region.*

California:—Introduced molluscs; STEARNS (495): Reprinted descriptions and notes; ORCUTT (366): *Epiphragmophora bowersi*, n. sp.; BRYANT (67): Occurrence of *Margaritana* in a water tunnel; BUTTON, Nautilus xiii, p. 130: *Epiphragmophora harperi*, n. sp.; BRYANT (68): Occurrence of *Vallonia pulchella*; STEARNS (494): Occurrence of *Circinaria hemphilli*; BUTTON, Nautilus xiv, p. 72.

Lower California:—Note on species of *Cœlocentrum*, with *C. eisenianum*, n. sp.; PILSBRY (394).

Lower California and neighbouring Islands:—Notes, with n. spp. of *Epiphragmophora* and *Succinea*; DALL (124).

30. *Canadian Region.*

Canada:—List of land shells; TAYLOR (519): Occurrence of *Gastrodonta lamellidens*; WALKER (548): Occurrence of *Hemphillia glandulosa*; TAYLOR (520).

Vancouver I.:—*Vertigo columbiana*, n. sp.; PILSBRY & VANATTA (421).

Newfoundland:—Occurrence of *Helix hortensis*; CLAPP, Nautilus xiv, p. 72.

Puget Sound:—*Ariolimax steindachneri*, n. sp.; BABOR (21).

## MARINE MOLLUSCA.

1. *Arctic Province.*

W. Greenland:—N. spp. of *Bathydoris*, *Doridoxa* (n. gen.), and *Gonieolis*; BERGH (41).

S.W. of Iceland:—N. spp. of *Atthila* (n. gen.) and *Candiella*; BERGH (41).

Franz-Josef Land:—Marine shells with *Buccinum brucei*, n. sp.; MELVILL & STANDEN (330).

Kolguev:—Marine shells; MELVILL & STANDEN (330).

2. *Boreal Province.*

Norway:—Littoral shells from Lyngor; STRAND (504).

3. *Celtic Province.*

Study of fauna continued; KOBELT (269).

British Islands:—Notes on Gastropods; MARSHALL (297).—South of England: Abundance of *Octopus*; GARSTANG (179).—*Acmæa testudinalis* on N.E. English coast; ROEBUCK, Naturalist 1900, p. 299.—Salcombe Estuary: Fauna; ALLEN & TODD (5).—Falmouth: Notes on fauna; VALLENTIN (531).—Hampshire & I. of Wight: Fauna; WOODWARD & ADAMS (569).—Yorkshire: *Acmæa testudinalis*; BRAIM, Naturalist 1900, p. 367.—Ireland: Fauna of; NICHOLS (352).—Bantry Bay: *Odostomia verticalis*, n. sp.; MARSHALL (297).—Valencia Harbour: Pelagic fauna; BROWNE (64): Opisthobranchiate Molluscs; BEAUMONT (33).—Scotland: Marine Mollusca; KNIGHT (265).—West Lothian: *Eledone cirrhosa*; GODFREY, Ann. Scott. Nat. Hist. 1900, p. 185.—Aberdeen: *Myrina simpsoni*, n. sp.; MARSHALL (296).—Firth of Forth: Occurrence of *Sepiola rondeleti*; GODFREY, Ann. Scott. Nat. Hist. 1900, p. 125.

4. *Lusitanian Province.*

Study of fauna continued ; KOBELT (269).

France :—Comparison of Opisthobranchs from Mediterranean and Atlantic coasts ; VAYSSIÈRE (534) : Species of *Fissurella* ; LOCARD (282) : Marine mollusca occurring at Cancale ; MARTEL (300).—Gironde : Note on *Ostrea angulata* ; ROCHEBRUNE (445).—Saint-Malo : List of marine mollusca ; DAUTZENBERG & DUROUCHOUX (140).

Gulf of Gascony :—*Melampus biscayensis*, n. sp. ; FISCHER (171).

Portugal :—Fauna continued ; NOBRÉ (354).

Mediterranean :—*Gadinia requieni*, n. sp. ; LOCARD (281) : Notes on shells, with *Cyclope westerlandi*, n. sp., Greece ; BRUSINA (65).

Corsica :—Gastropod fauna, with n. spp. of *Clathurella*, *Mangelia*, and *Nassa* ; LOCARD & CAZIOT (283).

Adriatic :—Notes on Pelecypods ; CHIAMENTI (85).

Oran :—Fauna, with many new varieties, and n. spp. of *Alexia*, *Columbella*, *Eulina*, and *Nassa* ; PALLARY (369).

Azores :—*Bathysciadium conicum*, n. g. and n. sp. ; DAUTZENBERG & FISCHER (142) : New species of *Discodoris* and *Marsenia* ; BERGH (38).

Azores and Madeira, between :—*Micrella dubia*, n. gen. and sp. ; BERGH (38).

5. *Aralo-Caspian Province.*

Caspian Sea :—Shells from ; LÖNNBERG (290).

6. *West African Province.*

Cape Verd Is. :—*Lucapinella versluysi* and *Modulus guernei*, n. spp. ; DAUTZENBERG (135).

Togo :—Occurrence of *Teredo fimbriata* ; MARTENS (304).

Goree :—*Turbonilla maltzani*, n. sp. ; CLESSIN in MARTINI & CHEMNITZ (311).

7. *South African Province.*

South Africa :—Occurrence of *Cryptoplax* ; SYKES (513) : *Paraplysia lowii*, n. sp. ; GILCHRIST (188) : *Pleurobranchæa capensis*, n. sp. ; VAYSSIÈRE (533) : New species of *Bullia*, *Cassia*, *Dolium*, and *Turbo* ; EUTHYME, Bull. Soc. malac. France ii, pp. 237–252 [1885].

Pondoland and The Kowie :—Notes on shells with n. spp. of *Amphiperas*, *Ancilla*, *Columbella*, *Euthria*, *Gibbula*, *Mitra*, *Nassa*, *Niso*, *Terebra*, *Tritonidea*, *Trophon* (?), *Turbonilla*, and *Turritella* ; SOWERBY (485).

Delagoa :—Marine shells ; BUGNION, Bull. Soc. Vaudoise xxxv, p. 278.

8. *Indo-Pacific Province.*

Andaman Islands :—*Cassia booleyi*, n. sp. ; SOWERBY (487).

Christmas Island :—List of marine shells ; SMITH (480).

China :—New species of *Odostomia* and *Turbonilla* ; CLESSIN in MARTINI & CHEMNITZ (311).

Lake Baikal :—Notes on fauna ; DYBOWSKI (160) : *Ancylodoris baikalensis*, n. sp. ; DYBOWSKI (162).

Philippine Islands :—*Odostomia manilensis*, n. sp. ; CLESSIN in MARTINI & CHEMNITZ (311).—Cebu : New species of *Cyclostrema*, *Glyphostoma*, *Leptothyra*, *Marginella*, *Mitra*, *Mucronalia*, *Natica*, *Ocenebra*, *Ringicula*, and *Vitrinella* ; SOWERBY (486).

Sumatra :—*Parthenia benguelensis*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Amboina :—*Oscaniopsis amboinei*, n. sp.; VAYSSIÈRE (533): *Turbonilla subulata*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Timor :—*Turbonilla martensi*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Hawaiian Islands :—*Cypræa kawilani*, n. sp.; KENYON (261).

Laysan Island :—*Samla annuligera*, n. gen. and n. sp.; BERGH (40).

Pacific Ocean :—*Chelidonura plebeia*, n. sp.; BERGH (39).

Ralum I. :—*Phyllaplysia pacifica*, n. sp.; BERGH (39).

Ralik Islands :—*Turbonilla fintshi*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Fiji :—Occurrence of *Scala revoluta*; HEDLEY (219).

New Caledonia :—New species of *Cerithiopsis* and *Natica*; EUTHYME, Bull. Soc. malac. France ii, pp. 239, 255 [1885].

Torres Straits :—New species of *Couthouyia*, *Scalenostoma*, and *Teinostoma*; HEDLEY (220).

Queensland :—New species of *Leucotina*, *Liotia*, and *Scalenostoma*; HEDLEY (220).

### 9. Australo-Zealandic Province.

South Australia :—New species of *Ischnochiton* and *Callochiton*; ASHBY (18): *Chiton oruktus*, n. sp.; MAUGHAN (315): New species of *Eulima*, *Marginella*, *Odontostomia*, and *Scalaria*; TATE & MAY (516).

Victoria :—Notes on some species of *Murex*; KENYON (260): New species of *Erato*, *Marginella*, *Natica*, *Odostomia*, *Stylifer*, and *Turbonilla*; PRITCHARD & GATLIFF (430): New species of *Cithara*, *Clathurella*, *Drillia*, *Liotia*, *Mangilia*, and *Mitromorpha*; PRITCHARD & GATLIFF (427): Review of fauna continued, with critical notes; PRITCHARD & GATLIFF (428, 429): Note on marine mollusca; GATLIFF (180): New species of *Eulima*, *Odontostomia*, *Rissoia*, and *Scalaria*; TATE & MAY (516).

N. S. Wales :—Notes on fauna, with n. spp. of *Fossarus*, *Menon* (n. gen.), *Puncturella*, and *Seila*; HEDLEY (220): Occurrence of *Turricula scalariformis*; HEDLEY (218).—Off Sydney (410 fthms.): New species of *Turritella*; DONALD (151).—Port Jackson: New variety of *Turritella quadrata*; DONALD (151).

Bass Strait :—New species of *Turritella*; DONALD (151).

Tasmania :—New species of *Cadulus*, *Cantharus*, *Carditella*, *Cyamium*, *Cyclostrema*, *Donovania*, *Eulima*, *Lampusia*, *Marginella*, *Odontostomia*, *Rissoia*, *Rissopsis*, *Scalaria*, *Syrnola*, *Thylacodes*, and *Turritella*; TATE & MAY (516): Shells in Tasmanian Museum; LODDER (284).

New Zealand :—Two new species of *Æolidiella*; BERGH (40).

### 10. Japonic Province.

Japan :—New species of *Euthria*, *Siphonalia*, and *Voluta*; SOWERBY (488): New species of *Odostomia* and *Turbonilla*; CLESSIN in MARTINI & CHEMNITZ (311).

### 11. Aleutian Province.

Canada :—Fauna of Pacific Coast; TAYLOR (519).

Vancouver Island :—*Phyllaplysia taylora*, n. sp.; DALI (131): *Archidoris nyctea*, n. sp.; BERGH (40).

Sitka :—*Odostomia sitkaensis*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).



Bering Strait :—*Macoma krausei*, n. sp. ; DALL (122).

Alaska :—New species of *Macoma* ; DALL (122).

## 12. *Californian Province.*

Western North America :—Review of *Tellinidæ* ; DALL (122) : Review of *Cardiidæ* ; DALL (123) : Notes on species of *Saxidomus* ; STEARNS (493).

California :—Introduced molluscs ; STEARNS (495) : Varieties of *Haliotis* ; STEARNS (490) : Reprinted descriptions and notes ; ORCUTT (366) : *Capulus californicus*, n. sp. ; DALL (125) : Occurrence of *Myoforceps aristatus* near San Diego ; BUTTON, Nautilus xiii, p. 131 : *Murex petri*, n. sp. ; DALL (128) : *Pleurobranchus californicus*, n. sp. ; DALL (132).—San Diego Bay : Note on fauna ; KELSEY (257).

California and Lower California :—New species of *Tellina* and *Macoma* ; DALL (122).

## 13. *Panamic Province.*

Mexico :—*Tellina macneilii*, n. sp. ; DALL (122).

Panama :—*Odostomia panamensis*, n. sp. ; CLESSIN in MARTINI & CHEMNITZ (311) : New species of *Macoma* and *Tellina* ; DALL (122).

Colombia :—Marine shells ; BAVARIA, PRINCESS OF (29).

Guatemala :—Occurrence of *Purpura coronata* ; PILSBRY, Nautilus xiii, p. 130.

Galapagos :—*Cypræa galapagensis*, n. sp. ; MELVILL (326).

## 14. *Peruvian Province.*

Peru :—Marine shells ; BAVARIA, PRINCESS OF (29).

Chili :—Marine shells ; BAVARIA, PRINCESS OF (29).

## 15. *Antarctic Province.*

Patagonia :—New species of *Chlorostoma* ; PILSBRY (403).

## 16. *Argentine Province.*

Argentina :—*Sistrum nicocheanum*, n. sp. ; PILSBRY (409).

Uruguay :—Review of fauna ; CORSI (105).

Rio La Plata :—*Tellina iheringi*, n. sp. ; DALL (122).

## 17. *Caribbean Province.*

Caribbean Province :—Collection from various localities, with notes ; DAUTZENBERG (135).

Texas :—New species of *Tellina* and *Macoma* ; DALL (122).

Gulf of Mexico :—*Tellina georgiana*, n. sp. ; DALL (122).

St Thomas :—*Tellina georgiana*, n. sp. ; DALL (122).

Guadeloupe :—*Tellina colorata*, n. sp. ; DALL (122).

Jamaica :—*Diplodonta* (*Phlyctiderma*) *puncturella*, n. sp. ; DALL (121) : *Turbonilla pulchra*, n. sp. ; CLESSIN in MARTINI & CHEMNITZ (311).

Cuba :—*Turbonilla gracilis*, n. sp. ; CLESSIN in MARTINI & CHEMNITZ (311).

West Indies :—*Turbonilla rentsii*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Venezuela :—Marine shells; BAVARIA, PRINCESS OF (29).

Off Venezuela :—New species of *Chlamys*, *Drillia*, *Nucula*, *Pecten*, and *Phos*; DAUTZENBERG (135).

N. coast of Colombia :—New species of *Chlamys*, *Drillia*, *Leda*, *Nucula*, *Pecten*, and *Phos*; DAUTZENBERG (135).

Brazil :—*Tellina flagellum*, n. sp.; DALL (122): New species of *Odostomia* and *Turbonilla*; CLESSIN in MARTINI & CHEMNITZ (311): *Fissurella henseli*, n. sp.; MARTENS (308).

Eastern South America :—*Mytilidæ*; IHERING (239).

## 18. Transatlantic Province.

Eastern North America :—Review of *Cardiide*; DALL (123): Review of *Tellinidæ*; DALL (122).

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†*Kerunia*, n. g. for *K. cornuta*, n. sp. from the Eocene of Egypt; MAYER-EYMAR, Eclog. geol. Helvet. vi, p. 120.

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†*Acanthinites*, n. subg. of *Cyrtopleurites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 517 [1893].

†*Anasibirites*, n. subg. of *Sibirites*, Mojs. from the Trias; MOJSISOVICS, Denk. Ak. Wien lxiii, p. 615 [1897].

†*Anasirenites*, n. subg. of *Sirenites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 725 [1893].

†*Anatibetites*, from the Upper Trias of the Himalaya; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 349 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 635 [1897].

†*Anatomites*, n. subg. of *Juvavites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 74 [1893].

†*Anatropites*, n. subg. of *Tropites*, Mojs.; MOJSISOVICS, t. c. p. 184 [1893].

†*Anolcites*, n. subg. of *Trachyceras*, Laube; MOJSISOVICS, t. c. p. 617 [1893].

†*Arthaberites*, n. g., for *A. alexandrae*, n. sp., from the Muschelkalk near Hallstatt; DIENER, Beitr. Pal. Oesterr.-Ung. xiii, p. 17.

†*Bambanagites*, n. gen. from the Trias of the Himalaya; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 350 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 660 [1897].



- +*Barrandeites*, n. g., type *Ammonites turbina*, Dittm.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 153 [1893].
- +*Beloceras*, n. g. for *Goniates multilobatus*, Beyr.; HYATT, P. Boston Soc. xxii, p. 333 [1884].
- +*Brancoceras*, n. g., type *Goniates ixion*, Hall; HYATT, t. c. p. 325 [1884].
- +*Buchites*, n. subg. of *Ceratites*, de Haan; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Celæceras*, n. g., for *Goniates præmaturus*, Barrande; HYATT, P. Boston Soc. xxii, p. 312 [1884].
- +*Clionites*, n. subg. of *Arpadites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 451 [1893].
- +*Cryptoclymenia*, n. g., type *Clym. beaumonti*, Münster.; HYATT, P. Boston Soc. xxii, p. 314 [1884].
- +*Cyclocelites*, n. subg. of *Celites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 347 [1893].
- +*Danubites*, n. subg. of *Ceratites*, de Haan; MOJSISOVICS, t. c. p. 398 [1893].
- +*Daphnites*, n. subg. of *Arpadites*, Mojs.; MOJSISOVICS, t. c. p. 452 [1893].
- +*Dimeroceras*, n. g., type *Goniates mamilifer*, Sandb.; HYATT, P. Boston Soc. xxii, p. 330 [1884].
- +*Dimorphites*, n. subg. of *Juvavites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 74 [1893].
- +*Dimorphoceras*, n. g., for *Goniates gilbertsoni*, Phill., and *looneyi*, Phill.; HYATT, P. Boston Soc. xxii, p. 331 [1884].
- +*Dionites*, n. subg. of *Arpadites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 453 [1893].
- +*Diplosirenites*, n. subg. of *Sirenites*, Mojs.; MOJSISOVICS, t. c. p. 725 [1893].
- +*Dittmarites*, n. subg. of *Arpadites*, Mojs.; MOJSISOVICS, t. c. p. 451 [1893].
- +*Drepanites*, n. subg. of *Arpadites*, Mojs.; MOJSISOVICS, t. c. p. 453 [1893].
- +*Ectolcites*, n. g. for *Ammonites pseudoaries*, F. v. Hauer and *E. hochstetteri*, n. sp.; MOJSISOVICS, t. c. p. 613 [1893].
- +*Eremites*, n. g., type *E. orientalis*, Mojs.; MOJSISOVICS, t. c. p. 704 [1893].
- +*Gastrioceras*, n. g. for *Goniates listeri*, Phillips, and others; HYATT, P. Boston Soc. xxii, p. 327 [1884].
- +*Gephuroceras*, n. g., type *Goniates sinuosus*, Hall; HYATT, t. c. p. 317 [1884].
- +*Glyphidites*, n. subg. of *Ceratites*, de Haan; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Griesbachites*, n. subg. of *Juvavites*, Mojs. from the Trias; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 347 [1896]: Denk. Ak. Wien lxiii, p. 603 [1897].
- +*Guembelites*, for *G. jandianus*, n. sp., from the Upper Trias of the Himalaya; MOJSISOVICS, t. c. p. 349 [1896, nom. nud.]: as n. subg. of *Heracites*; Denk. Ak. Wien lxiii, p. 634 [1897].
- +*Haidingerites*, n. g. for *Ammonites acutinodis*, Hauer; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 393 [1893].
- +*Hauerites*, n. subg. of *Cyrtopleurites*, Mojs.; MOJSISOVICS, t. c. p. 517 [1893].
- +*Haugiceras*, n. n. for *Prionoceras*, Hyatt, nom. preocc.; COSSMANN, Rev. paleozool. iv, p. 43.
- +*Helictites*, n. subg. of *Ceratites*, de Haan; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Heminautilus*, n. g., type *Goniates hybridus*, Münster; HYATT, P. Boston Soc. xxii, p. 310 [1884].
- +*Homerites*, n. subg. of *Halorites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 13 [1893].
- +*Homoceras*, n. g., type *Goniates calyx*, Phillips; HYATT, P. Boston Soc. xxii, p. 330 [1884].

- +*Jovites*, n. subg. of *Halorites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 13 [1893].
- +*Knemiceras*, n. g., type *Ammonites syriacus*; БӨНМ, Zeitschr. Deutsch. geol. Ges. I, p. 200 [1898].
- +*Maeneceras*, n. g., type *Goniatites acutolateralis*, Sandb.; HYATT, P. Boston Soc. xxii, p. 321 [1884].
- +*Manticoceras*, n. g., type *Goniatites simulator*, Hall; HYATT, t. c. p. 318 [1884].
- +*Metasibirites*, n. subg. of *Sibirites*, Mojs. from the Trias; MOJSISOVICS, Denk. Ak. Wien lxiii, p. 616 [1897].
- +*Metatirolites*, n. subg. of *Tirolites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 588 [1893].
- +*Microtropites*, n. subg. of *Tropites*, Mojs.; MOJSISOVICS, t. c. p. 184 [1893].
- +*Militites*, n. g. for *M. schroeri*, n. sp. and others; MOJSISOVICS, t. c. p. 334 [1893].
- +*Mimoceras*, n. g., type *Goniatites compressus*, Beyrich; HYATT, P. Boston Soc. xxii, p. 309 [1884].
- +*Münsterites*, n. subg. of *Arpadites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 451 [1893].
- +*Munsteroceras*, n. g., type *Goniatites oweni* var. *parallelus*, Hall; HYATT, P. Boston Soc. xxii, p. 326 [1884].
- +*Nomismoceras*, n. g. for *Goniatites spirorbis*, Phill., *rotiformis*, Phill., and others; HYATT, t. c. p. 330 [1884].
- +*Paracladiscites*, n. g. from the Upper Trias of India; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 347 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 657 [1897].
- +*Paracochloceras*, n. subg. of *Cochloceras*, Hauer; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 575 [1893].
- +*Parajuvarites*, n. gen. from the Trias; MOJSISOVICS, Verh. geol. Reichsanst. 1896, pp. 348 & 349 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 590 [1897].
- +*Paralegoceras*, n. g., type *Goniatites iowensis*, M. & W.; HYATT, P. Boston Soc. xxii, p. 327 [1884].
- +*Pararcestes*, n. subg. of *Arcestes* Suess; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 785 [1893].
- +*Parathisbites*, n. subg. of *Ceratites*, de Haan; MOJSISOVICS, t. c. p. 397 [1893].
- +*Paratibetites*, from the Upper Trias of the Himalaya; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 349 [1896, nom. nud.]: as n. subg. of *Tibetites*, Mojs.; MOJSISOVICS, Denk. Ak. Wien lxiii, p. 635 [1897].
- +*Paratropites*, n. subg. of *Tropites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 184 [1893].
- +*Parodicerias*, n. g., type *Goniatites discoideus* Hall; HYATT, P. Boston Soc. xxii, p. 319 [1884].
- +*Paulotropites*, n. subg. of *Tropites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 184 [1893].
- +*Peripleurites*, n. subg. of *Choristoceras*, Hauer; MOJSISOVICS, t. c. p. 546 [1893].
- +*Pharciceras*, n. g. for *Goniatites tridens*, Sandb., *G. clavilobus*, Sandb., and others; HYATT, P. Boston Soc. xxii, p. 336 [1884].
- +*Phormedites*, n. subg. of *Ceratites*, de Haan; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Platyclymenia*, n. g. for *P. annulata*, *spinosa*, and *binodosa*, Münster; HYATT, P. Boston Soc. xxii, p. 314 [1884].
- +*Popanoceras*, n. g. for *Goniatites kingianus*, *G. koninckianus*, and others; HYATT, t. c. p. 338 [1884].
- +*Prionoceras*, n. g., type *Goniatites divisus*, Münster; HYATT, t. c. p. 328 [1884]: Renamed *Haugiceras*, q.v.

- +*Proarcestes*, n. subg. of *Arcestes*, Suess; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 785 [1893].
- +*Protrachyceras*, n. subg. of *Trachyceras*, Laube; MOJSISOVICS, t. c. p. 617 [1893].
- +*Psilocladiscites* [n. g. ?] from the Trias of Bosnia; MOJSISOVICS, Denk. Ak. Wien lxiii, p. 658 [1897].
- +*Ptycharcestes*, n. subg. of *Arcestes*, Suess; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 786 [1893].
- +*Sandbergeoceras*, n. g. for *Goniatites tuberculosocostatus*, Sandb. and *G. chemungensis*, Hall; HYATT, P. Boston Soc. xxii, p. 333 [1884].
- +*Sandlingites*, n. g. for *Ammonites oribasus*, Dittmar and others; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 706 [1893].
- +*Schistoceras*, n. g. for an undescribed species; HYATT, P. Boston Soc. xxii, p. 336 [1884].
- +*Sibyllites*, n. g. for *S. tenuispinatus*, n. sp. and others; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 314 [1893].
- +*Sirenites*, n. g. from the Trias; MOJSISOVICS, t. c. p. 725 [1893].
- +*Sonninia*, aptychus of; NICKLES, Bull. Soc. Nancy xvi, p. 125.
- +*Sporadoceras*, n. g. type *Goniatites bidens*, Sandb.; HYATT, P. Boston Soc. xxii, p. 321 [1884].
- +*Steinmannites*, n. subg. of *Arpadites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 452 [1893].
- +*Styrites*, n. g. for *S. tropitiiformis*, n. sp. and others; MOJSISOVICS, t. c. p. 264 [1893].
- +*Thetidites* from the Trias; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 349 [1896, nom. nud.]: As n. subg. of *Sibirites*, Mojs.; Denk. Ak. Wien lxiii, p. 616 [1897].
- +*Thisbites*, n. subg. of *Ceratites*, de Haan; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Tibetites*, n. subg. of *Cyrtopleurites*, Mojs.; MOJSISOVICS, t. c. p. 516 [1893].
- +*Tornoceras*, n. g. type *Goniatites uniangularis*, Hall; HYATT, P. Boston Soc. xxii, p. 320 [1884].
- +*Triainoceras*, n. g. for *Goniatites costatus*, d'Arch. and de Vern.; HYATT, t. c. p. 337 [1884].

## TETRABRANCHIATA.

- +*Acleistoceras*, n. g., type *Apioceras olla*, Saem.; HYATT, P. Boston Soc. xxii, p. 277 [1884].
- +*Aipoceras*, n. g. for *Gyroceras gibberosum*, de Koninck; HYATT, t. c. p. 296 [1884].
- +*Alpheiceras*, n. n. for *Hyatticeras* Cossmann [q.v.] nec *Hyattoceras*, Gemm.; COSSMANN, Rev. paleozool. iv, p. 144.
- +*Anomaloceras*, n. g. for *Nautilus anomalus*, Barrande; HYATT, t. c. p. 283 [1884]: Renamed *Hyatticeras*, q.v.
- +*Aphelaeceras*, n. g. for *Nautilus difficilis*, de Koninck, and *Discites disciformis*, M. & W.; HYATT, P. Boston Soc. xxii, p. 293.
- +*Apsidoceras*, n. g., type *Gyroceras magnificum*, Billings; HYATT, t. c. p. 289 [1884].
- +*Barrandeoceras*, n. g., type *Nautilus natator*, Billings; HYATT, t. c. p. 299 [1884].
- +*Billingsites*, n. g., type *Ascoceras canadense*, Billings; HYATT, t. c. p. 278 [1884].
- +*Cenoceras*, n. g., type *Nautilus intermedius*, Sowerby; HYATT, t. c. p. 300 [1884].

- +*Centroceras*, n. g., type *Goniatites marcellensis*, Vanuxem; HYATT, t. c. p. 283 [1884].
- +*Conradiceras*, n. n. for *Solenoceras*, Hyatt nec Conrad; COSSMANN, Rev. paleozool. iv, p. 43.
- +*Cranoceras*, n. g., type *Cyrtoceras depressum*, Goldf.; HYATT, P. Boston Soc. xxii, p. 281 [1884].
- +*Cymatoceras*, n. g., type *Nautilus pseudoelegans* d'Orb.; HYATT, t. c. p. 301 [1884].
- +*Dawsonoceras*, n. g., type *Orthoceras annulatum*; HYATT, t. c. p. 276 [1884].
- +*Deiroceras*, n. subg. of *Actinoceras*, type *Orthoceras python*, Billings; HYATT, t. c. p. 273 [1884].
- +*Diadiploceras*, n. g., type *Dia. quadratum*, Hall [nom. nud.]; HYATT, t. c. p. 268 [1884].
- +*Discitoceras*, nom. nov. for *Discites* M'Coy, type *D. costellatus*, M'Coy; HYATT, t. c. p. 292 [1884].
- +*Edaphoceras*, n. g., type *Temnocheilus niotensis*, M. & W.; HYATT, t. c. p. 288 [1884].
- +*Enclimatoceras*, n. g., type *Enclim. ulrichi*, White; HYATT, t. c. p. 270 [1884].
- +*Ephippioceras*, n. g., type *Nautilus ferratus*, Owen; HYATT, t. c. p. 290 [1884].
- +*Eremoceras*, n. g., type *Cyrtoceras syphax*, Billings; HYATT, t. c. p. 282 [1884].
- +*Geisonoceras*, n. g., type *Orthoceras rivale*, Barrande; HYATT, t. c. p. 275 [1884].
- +*Grypoceras*, n. g., type *Nautilus mesodiscus*, v. Hauer; HYATT, t. c. p. 269 [1884].
- +*Halloceras*, n. g., type *Gyroceras undulatum*, Hall; HYATT, t. c. p. 284 [1884].
- +*Hexameroceras*, n. g., type *Phragmoceras panderi*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Hyatticeras*, n. n. for *Anomaloceras*, Hyatt, nom. preocc.; COSSMANN, Rev. paleozool. iv, p. 43 [Renamed *Alpheiceras*, q.v.].
- +*Kionoceras*, n. g., type *Orthoceras doricum*, Barrande; HYATT, P. Boston Soc. xxii, p. 275 [1884].
- +*Koninckioceras*, n. g., type *Nautilus ingens*, de Koninck; HYATT, t. c. p. 295 [1884].
- +*Kophinoceras*, n. g., type *Cyrtoceras ornatum*, d'Arch. & de Vern.; HYATT, t. c. p. 285 [1884].
- +*Litoceras*, n. g., type *Nautilus versutus*, Billings; HYATT, t. c. p. 268 [1884].
- +*Maelonoceras*, n. g., type *Phragmoceras præmaturum*, Billings; HYATT, t. c. p. 280 [1884].
- +*Mesochasmoceras*, n. g., type *Nautilus latidorsatus*, M'Coy; FOORD (173), p. 72.
- +*Metacoceras*, n. g., type *Nautilus sangamonensis*, M. & W.; HYATT, P. Boston Soc. xxii, p. 268 [1884].
- +*Mojsvarcoceras*, n. g., type *Temnocheilus neumayeri*, Mojs.; HYATT, t. c. p. 269 [1884].
- +*Naedyceras*, n. g., type *Trochoceras eugenium*, Hall; HYATT, t. c. p. 281 [1884].
- Nautilus pompilius*, arterial circulation of; GRIFFIN, Johns Hopkins Univ. Circ. xix, p. 53.
- +*Nephriticeras*, n. g., type *Nautilus buccinum*, Hall; HYATT, P. Boston Soc. xxii, p. 300 [1884].
- +*Oonoceras*, n. g. for *Cyrtoceras acinacies*, Barrande, and others; HYATT, t. c. p. 280 [1884].



- +*Pentameroceras*, n. g., type *Gomphoceras mirum*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Phacoceras*, n. g., type *Nautilus oxystomus*, de Koninck; HYATT, t. c. p. 293 [1884].
- +*Phloioceras*, n. g., type *Nautilus gemmatus*, Mojs.; HYATT, t. c. p. 286 [1884].
- +*Placenticeras*, phylogeny and development; SMITH (482).
- +*Plectoceras*, n. g., type *Nautilus jason*, Billings; HYATT, P. Boston Soc. xxii, p. 268 [1884].
- +*Pselioceras*, n. g., type *Nautilus ophioneus*, Waagen; HYATT, t. c. p. 299 [1884].
- +*Ptyssoceras*, n. g., type *Cyrtoceras alienum*, Barrande; HYATT, t. c. p. 282 [1884].
- +*Rizoceras*, n. g., type *Orthoceras indocile*, Barrande; HYATT, t. c. p. 276 [1884].
- +*Sactoceras*, n. g., type *Orthoceras richteri*, Barrande; HYATT, t. c. p. 274 [1884].
- +*Septameroceras*, n. g., type *Gomphoceras inflatum*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Solenoceras*, n. g., type *Nautilus canaliculatus*, Owen; HYATT, t. c. p. 286 [1884]: Renamed *Conradiceras*, q.v.
- +*Sphyradoceras*, n. g., type *Trochoceras clio*, Hall; HYATT, P. Boston Soc. xxii, p. 298 [1884].
- +*Spyroceras*, n. g., type *Orthoceras crotalum*, Hall; HYATT, t. c. p. 276 [1884].
- +*Stroboceras*, n. g., type *Gyroceras hartii*, Dawson; HYATT, t. c. p. 291 [1884].
- +*Strophiceras*, n. g. for *Gyroceras binodosum*, Sandb.; HYATT, t. c. p. 286 [1884].
- +*Tainoceras*, n. g., type *Nautilus quadrangulus*, McChesney; HYATT, t. c. p. 269 [1884].
- +*Tetrameroceras*, n. g., type *Phragmoceras bicinctum*, Barrande; HYATT, t. c. p. 277 [1884].
- +*Titanoceras*, n. g., type *Nautilus ponderosus*, White; HYATT, t. c. p. 289 [1884].
- +*Triboloceras*, n. g., type *Gyroceras serratum*, de Koninck; HYATT, t. c. p. 294 [1884].
- +*Trimeroceras*, n. g., type *Gomphoceras staurostoma*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Tripleuroceras*, n. g., type *Orthoceras archiaci*, Barrande; HYATT, t. c. p. 289 [1884].
- +*Triplioceras*, n. g. for *Nautilus insperatus*, Barrande; HYATT, t. c. p. 285 [1884].
- +*Tripteroceras*, n. g., type *Orthoceras hastatum*, Billings; HYATT, t. c. p. 287 [1884].
- +*Uranoceras*, n. g., type *Cyrtoceras uranum*, Barrande; HYATT, t. c. p. 299 [1884].
- +*Vaginoceras*, n. g., type *Orthoceras multitubulatum*, Hall; HYATT, t. c. p. 266 [1884].
- +*Zittelloceras*, n. g., type *Cyrtoceras lamellosum*, Hall; HYATT, t. c. p. 284 [1884].

## II. GASTROPODA.

New works on the distribution of Gastropoda; SIMROTH (468).

New works on the morphology and biology of Gastropoda; SIMROTH (469).

## PULMONATA.

## STYLOMMATOPHORA.

Stylommatophora, morphology of; TÄUBER (517).

## TESTACELLIDÆ and SELENITIDÆ.

- Apera burnupi*, figd.; COLLINGE, Ann. S. African Mus. ii, p. 4.  
*Apera natalensis*, S. Africa; COLLINGE, Ann. S. African Mus. ii, p. 3, fig.: n. sp.  
*Ennea cruciata*, German East Africa; MARTENS, SB. Ges. naturf. Berlin 1900, p. 179: *E. (Microstrophia) irregularis*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 119: n. spp.  
*Glandina iheringi*, Guatemala; PILSBRY, Nautilus xiv, p. 4: *G. chiriquiensis*, Panama, *floccata*, U.S. of Colombia, p. 66, *aequatoria*, Ecuador, p. 67; DA COSTA, P. Malac. Soc. London iv, figg.: n. spp.  
*Happia iheringi*, Brazil; PILSBRY, P. Ac. Philad. 1900, p. 385, fig.: n. sp.  
*Paryphanta*, see reference inserted at p. 63, last year: *P. lignaria*, note on with figure; HUTTON, Tr. N. Zealand Inst. xxxii, p. 22.  
*Streptaxis tumescens*, p. 330, *interruptus*, p. 331, Brazil; SÜTER, Rev. Mus. Paulista iv, figg.: *S. (Discartemon) paradiscus*, p. 117, *pachyglottis*, *dipledon*, p. 118, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900: n. spp.  
*Streptostylus flavescens*, Panama; DA COSTA, P. Malac. Soc. London iv, p. 66, fig.: n. sp.

## LIMACIDÆ, ZONITIDÆ, and PHILOMYCIDÆ.

- Monographs of *Zonites* and *Nanina*; KOBELT in MARTINI & CHEMNITZ (311).  
*Agriolimax corsicus*, Corsica; SIMROTH, Nachrbl. Deutsch. malak. Ges. 1900, p. 102: n. sp.  
*Amalia dalmatina*, Dalmatia, p. 106, *montenegrina*, Montenegro, p. 107; SIMROTH, t. c.: *A. ponsonbyi*, S. Africa; COLLINGE, Ann. S. African Mus. ii, p. 2, fig.: n. spp.  
*Arnouldia nahaensis*, Loo-Choo Is.; GUDE, P. Malac. Soc. London iv, p. 75, fig.: *A. ceratodes*, p. 398, *nanodes*, p. 399, Japan; GUDE, Ann. Nat. Hist. vi: n. spp.  
†*Chancelia*, n. gen. for *C. letourneuxi*, n. sp., post-tertiary, Algeria; HAGENMÜLLER, Bull. Soc. malac. France ii, p. 311 [1885].  
*Crystallus sulcatus*, *velatus*, Japan; GUDE, Ann. Nat. Hist. vi, p. 399: n. spp.  
†*Delevieleusia*, n. gen. for five n. spp. from post-tertiary, Algeria; HAGENMÜLLER, Bull. Soc. malac. France ii, p. 305 [1885].  
*Euconulus*, note on genus, of which *Conulus*, Fitz., and *Arnouldia*, Brgt., are synonyms; PILSBRY, Nautilus xiv, p. 81.  
*Euconulus reinhardtii*, Japan; PILSBRY, t. c. p. 81: n. sp.  
*Eurypus*, Semper nec Kirby, renamed *Fretum*, q.v.  
†*Faudebia*, n. gen. for *F. letourneuxi*, n. sp., post-tertiary, Algeria; HAGENMÜLLER, Bull. Soc. malac. France ii, p. 309 [1885].  
*Fretum*, n. n. for *Eurypus*, Semper nec Kirby; SYKES, P. Malac. Soc. London iv, p. 140.  
*Fretum suteri*, Norfolk I., p. 140, *grayi*, Norfolk and Phillip Is., p. 141; SYKES, t. c. figg.: n. spp.

- Gæotis douvillei*, note on; COLLINGE, J. Malac. vii, p. 179.
- Gastrodonta suppressa*, n. var.; PILSBRY, Nautilus xiii, p. 107: *G. intertexta*, n. var.; PILSBRY, op. cit. xiv, p. 40.
- Gastrodonta walkeri*, Gt. Smoky Mts.; PILSBRY, P. Ac. Philad. 1900, p. 146: n. sp.
- Godwinia*, n. gen. of *Zonitidae* for *Vittrina caperata*, Gould; SYKES (509), p. 277.
- Guppya hopkinsi*, Cocos Is.; DALL, P. Ac. Philad. 1900, p. 97, fig. [*Radula* and jaw; PILSBRY, t. c. p. 105]: n. sp.
- Hemiplecta floweri*, *neptunus*, notes on, with anatomy; GODWIN-AUSTEN, P. Malac. Soc. London iv, pp. 31-36.
- Hemiplecta platytania*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 121: n. sp.
- Hyalinia*, integument of; ANDRÉ, Rev. Suisse Zool. viii, p. 425.
- Hyalinia baldwini*, Hawaiian Islands; ANCEY, Bull. Soc. malac. France vi, p. 192 [1889]: n. sp.
- Kaliella difficilis*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 120: *K. multivolvis*, Japan; PILSBRY, P. Ac. Philad. 1900, p. 383: *K. symmetrica*, p. 80, *fraterna*, p. 81, Japan; PILSBRY, Nautilus xiv: *K. elata*, *crenulata*, *pagoduloides*, Japan; GUDE, Ann. Nat. Hist. vi, p. 453: n. spp.
- Krynckillus hanryanus*, France; FLORENCE, Bull. Soc. malac. France vi, p. 330 [1889]: n. sp.
- Limacopsis*, n. gen. for *Limax cærulans*; SIMROTH, Abh. Senckenb. Ges. xvii, p. 3 [1890].
- Limax*, nervous system; VERATTI (535A): *L. agrestis*, maturation and fertilization of egg; BYRNES (73): *L. coccineus*, Gistel, appears to be a var. of *Arion rufus*; COCKERELL, Nautilus xiii, p. 117.
- Limax wohlberedti*, Montenegro, p. 98, *wolterstorffi*, *obscurus*, Corsica, p. 99; SIMROTH, Nachrbl. Deutsch. malak. Ges. 1900: *L. modestus*, France; FLORENCE, Bull. Soc. malac. France vi, p. 333 [1889]: n. spp.
- Macrochlamys*, anatomy; WIEGMANN (559): *M. convallata*, n. var.; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 8.
- Macrochlamys alluandi*, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, pp. 113, 444, fig.: *M. fulgens*, Loo-Choo Is.; GUDE, P. Malac. Soc. London iv, p. 75, fig.: *M. aureofusca*, German East Africa; MARTENS, SB. Ges. naturf. Berlin 1900, p. 178: *M. micrograpta*, Japan; PILSBRY, P. Ac. Philad. 1900, p. 382: n. spp.
- Medyla imitatrix*, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 142: n. sp.
- Microcystis baldwini*, Ancey, anatomy; GODWIN-AUSTEN in SYKES (509), p. 281.
- Microcystis hirasei*, Japan; GUDE, Ann. Nat. Hist. vi, p. 400: *M. nux*, *castaneocincta*, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 139, figg.: n. spp.
- Milax pacomei*, France; FLORENCE, Bull. Soc. malac. France vi, p. 326 [1889]: n. sp.
- Nanina* (*Xestina*) *theobaldiana* (NEVILL ubi?), Kudin; KOBELT in MARTINI & CHEMNITZ (311) p. 980, fig.: n. sp.?
- Omphalina levigata*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 135.
- Otesia* (*Coneuplecta*) *annamitica*, p. 119, *globulosa*, p. 120, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900: n. spp.
- Philomycus*, note on Asiatic species; COCKERELL, J. Malac. vii, p. 127.
- Philomycus secretus*, North Carolina; COCKERELL, Nautilus xiv, p. 59: n. sp.
- Philonesia*, n. gen. of *Zonitidae* for *Microcystis baldwini*, Ancey; SYKES (509), p. 280.
- Sesara*, notes on genus, with figure of *S. diptodon*; GUDE, J. Malac. vii, pp. 139-143.

- Sesara harmeri*, Assam; GUDE, t. c. p. 139, fig.: n. sp.  
*Sitala macgillivrayi*, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 142, fig.: n. sp.  
*Stenopus anguineus*, Ancey, radula; SUTER, Rev. Mus. Paulista iv, p. 332.  
*Trochomorpha kuesteri*, varieties of; MOELLENDORFF, J. Malac. vii, p. 104.  
*Trochonanina platysoma*, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 140, fig.: n. sp.  
*Vitrea rhoadsi*, note on distribution; WALKER, Nautilus xiv, p. 8: *V. petrophila*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 138.  
*Vitrea harimensis*, Japan; PILSBRY, t. c. p. 384: *V. actinophora*, Galapagos; DALL, t. c. p. 93, fig.: *V. clingmani*, Gt Smoky Mts.; DALL in PILSBRY, t. c. p. 150, fig.: n. spp.  
*Vitrina caperata*, Gould, anatomy; GODWIN-AUSTEN in SYKES (509), p. 277: *V. pellucida*, sinistral specimen; RIEMENSCHNEIDER, Nachrbl. Deutsch. malak. Ges. 1900, p. 116.  
*Vitrinizonites latissimus*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 137.  
*Zonites rollei*, Kobelt, genitalia; COLLINGE, P. Malac. Soc. London iv, p. 37.  
*Zonitoides neomexicanus*, Cockrill. & Pils., New Mexico; PILSBRY, Nautilus xiii, p. 114: n. sp.

## ARIONIDÆ.

- Anadenus dautzenbergi*, China; COLLINGE, J. Malac. vii, p. 134, fig.: n. sp.  
*Ariolimax steindachneri*, Puget Sound; BABOR, Ann. Hofmus. Wien xv, p. 95: n. sp.  
*Geomalacus maculosus*, eggs and young of; ROGERS (446): *G. maculosus*, notes on; ADAMS, J. Conch. ix, p. 301.  
*Oopelta flavescens, granulosa*, S. Africa; COLLINGE, Ann. S. African Mus. ii, p. 6, figg.: n. spp.  
*Tetraspis*, n. gen. for *T. letourneuxi*, n. sp., S. Europe; HAGENMÜLLER, Bull. Soc. malac. France ii, p. 303 [1885].

## ENDODONTIDÆ.

- Charopa kubaryi, ponapica*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 110: n. spp.  
*Endodonta (Thaumatodon) callizona*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 110: *E. helleri*, Galapagos; DALL, P. Ac. Philad. 1900, p. 93, fig.: n. spp.  
*Flammulina nigrescens*, note on anatomy; SUTER in MOELLENDORFF, J. Malac. vii, p. 106.  
*F. (Calymna) nigrescens*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 107: n. sp.  
*Garrettia*, n. n. for *Libera*, Garrett nec Haan; COSSMANN, Rev. paleozool. iv, p. 43 [*Garrettia* is preocc., *Libera* does not appear to have been proposed by Haan as a genus].  
*Helicodiscus eigenmanni*, Texas; PILSBRY, Nautilus xiv, p. 41: n. sp.  
*Helix rotundata*, scalariform; CARTER, Sci. Gossip vii, p. 96.  
*Helix (Phasis) sesquicincta*, German East Africa; MARTENS, SB. Ges. naturf. Berlin 1900, p. 117: *H. dictyonina*, New Caledonia; EUTHYME, Bull. Soc. malac. France ii, p. 257 [1885]: n. spp.  
*Libera*, Garrett, renamed *Garrettia*, q.v.  
*Patula digonophora*, Hawaiian Islands; ANCEY, Bull. Soc. malac. France vi, p. 171 [1889]: n. sp.  
*Pitys elisæ*, Hawaiian Islands; id. t. c. p. 180 [1889]: n. sp.  
*Platystoma*, Ancey, renamed *Saissetia*, q.v.



- Punctum japonicum*, Japan; PILSBRY, Nautilus xiv, p. 82: *P. blandianum*,  
Gt Smoky Mts.; PILSBRY, P. Ac. Philad. 1900, p. 148: n. spp.  
*Pyramidula alternata*, n. var.; PILSBRY, Nautilus xiii, p. 114.  
*Pyramidula elrodi*, Montana; PILSBRY, Nautilus xiv, p. 40: *P. pretiosa*,  
Japan; GUDE, Ann. Nat. Hist. vi, p. 454: *P. patagonica*, subfossil,  
Patagonia, p. 334, *schuppi*, Brazil, p. 335; SUTER, Rev. Mus. Paulista  
iv, figg.: n. spp.  
*Saissetia*, n. n. for *Platystoma*, Ancey nec Klein; ANCEY, Bull. Soc. malac.  
France v, p. 368 [1888].

## HELICIDÆ.

- Acavus*, anatomy of genus; RANGLES, P. Malac. Soc. London iv, pp. 103–  
113: Note on genus; SYKES, t. c. p. 114.  
*Acavus polei*, Ceylon; COLLETT, J. Ceylon Asiat. Soc. xv, p. 153, fig.:  
n. sp.  
*Amphidromus* should be transferred here from *Bulimide*; PILSBRY in  
TRYON (529).  
*Ashmunella*, anatomy of; PILSBRY, P. Ac. Philad. 1900, pp. 107–109: *A.*  
*hyporhyssa*, new varieties of; COCKERELL, Nautilus xiv, p. 72.  
*Camanella fruhstorferi*, p. 129, *nigricans*, p. 130, Annam; MOELLENDORFF,  
Nachrbl. Deutsch. malak. Ges. 1900: n. spp.  
*Campylaea frigida*, variation of; ANDREAE, Mt. Mus. Hildesheim xii, p. 10.  
*Campylocathaica*, n. subgen. of *Cathaica*, type *C. przewalskii*, Mart.;  
ANDREAE, t. c. p. 5.  
*Cathaica*, on the genus, with new names and figures, but no diagnoses;  
ANDREAE, t. c.: *C. przewalskii*, variation of; ANDREAE, t. c.  
*Cathaica obrutschewi*, p. 25, *perversa*, p. 26, Kansu; STURANY, Denk. Ak.  
Wien lxx, figg.: n. spp.  
*Chloritis (Trichochloritis) fragilis*, Japan; GUDE, P. Malac. Soc. London iv,  
p. 70, fig.: n. sp.  
*Epiphragmophora*, aestivation of; WILLIAMSON, Nautilus xiv, p. 13: *E.*  
*mormonum*, new varieties; PILSBRY, op. cit. xiii, p. 128: *E. oresigena*,  
n. var.; IHERING in PILSBRY, P. Ac. Philad. 1900, p. 389.  
*Epiphragmophora harperi*, California; BRYANT, Nautilus xiii, p. 143: *E.*  
*bowersi*, California; BRYANT, Nautilus xiii, p. 122: *E. leucanthea*,  
Cerro I., p. 99, *crassula*, Natividad I., p. 100, (*Micrarionta*) *guadelu-*  
*piana*, Guadalupe I., p. 101, *catalinae*, Catalina I., (*kellettii*, var. ?)  
*clementina*, San Clemente I., p. 103, *orcutti*, Lower California, p. 104;  
DALL, P. Ac. Philad. 1900, figg.: n. spp.  
*Eucathaica*, n. subgen. of *Cathaica*, type *C. fasciola*, Drap.; ANDREAE, Mt.  
Mus. Hildesheim xii, p. 3.  
*Euhadra lukuana*, n. var.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges.  
1900, p. 108.  
*Euhadra (?) pseudocampylaea*, borders of Thibet and Setchuen; ANCEY,  
Nautilus xiv, p. 83: n. sp.  
*Eulota mercatoria* and *E. caliginosa* are distinct species, with n. vars. of  
former, *E. callizona*, and *E. lukuana*; PILSBRY & GULICK, Nautilus  
xiv, pp. 88–91: *E. callizona*, n. var.; PILSBRY, Nautilus xiv, p. 60:  
*E. tourannensis*, n. var.; MOELLENDORFF, Nachrbl. Deutsch. malak.  
Ges. 1900, p. 131.  
*Eulota (Eulotella) micronesica*, Caroline Islands; MOELLENDORFF, J.  
Malac. vii, p. 110: *E. gudeana*, Japan; PILSBRY, Nautilus xiv, p. 60:  
*E. (Plectotropis) kiuisiuiensis*, Japan; PILSBRY, t. c. p. 79: *E. horrida*,  
(*Trishoplita* ?) *mesogonia*, Japan; PILSBRY, t. c. p. 11: *E. (Euhadra)*  
*grata*, Japan; GUDE, Ann. Nat. Hist. vi, p. 455: *E. hirasei*, p. 10,  
*awajiensis*, p. 11, Japan; GUDE, P. Malac. Soc. London iv, figg.

[respectively synonyms of *cavicolis*, Pils., and *aperta*, Pils.; GUDE, t. c. p. 78]: *E. (Plectotropis) amula*, p. 71, (*Euhadra*) *sericea*, p. 74, Japan, (*Plectotropis*) *lepidophora*, Loo-Choo Is., p. 76; GUDE, t. c., figg.: n. spp.

*Ganesella jacobii*, Japan; PILSBRY, Nautilus xiv, p. 12: *G. turrita*, Loo-Choo Is.; GUDE, P. Malac. Soc. London iv, p. 75, fig.: *G. tosana*, Japan; GUDE, Ann. Nat. Hist. vi, p. 455: *G. pagodula*, Japan; EHRMANN, Zool. Anz. xxiii, p. 381: n. spp.

*Helicidae*, anatomy of several species; WIEGMANN (559): Notes on classification; MOELLENDORFF (338): 'Convergenzerscheinung' in; ANDREAE (12): Note on 'rock-boring'; BOYCOTT, Sci. Gossip vi, p. 280: *Helices* boring rocks; HARLÉ (216): *H. albolabris*, growth of; MORRELL, Nautilus xiv, p. 9: *H. aspersa*, scalariform; PERCEVAL, Sci. Gossip vi, p. 253: *H. ericetorum*, sinistral; WELCH, Irish Natural. ix, p. 21: *H. lapicida*, sinistral; PARTRIDGE, J. Malac. vii, p. 180: *H. marmorata*, albino var.; JONES, J. Conch. ix, p. 302: *H. nemoralis*, abnormalities in; WELCH (551); GREEN, Irish Natural. ix, p. 271: *H. pomatia*, variation of genital organs; PEGOT (376): *H. pomatia*, blood of; PHISALIX, C.R. Soc. Biol. vii, p. 729: *H. pomatia*, supplement to revision of varieties; BUCHNER, Jahresber. Ver. Württemb. lvi, pp. 224-237: *H. pomatia*, radula; TEMPÈRE (523).

*Helix cerisi*, I. of Capri; BELINI, Boll. Soc. zool. Ital. i, p. 39: *H. leontinei*, France; GERMAIN, Bull. Soc. Rouen xxxiv, p. 197: *H. infra-fusca*, p. 177, *fulleborni*, p. 178, *binaria*, p. 179, German East Africa; MARTENS, SB. Ges. naturf. Berlin 1900: *H. (Camaena) lavezzarii*, pp. 108, 435, (*C.*) *vorvonga*, pp. 109, 436, (*Euhadra*) *fauveli*, pp. 110, 437, (*Eulota*) *vignali*, pp. 110, 439, (*Chloritis*) *marimberti*, pp. 111, 440, (*C.*) *durandi*, pp. 111, 441, (*C.*) *gereti*, (*Ganesella*) *saurivonga*, pp. 112, 442, (*G.*) *coudeini*, pp. 113, 443, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, figg.: *H. (Macularia) grossularia*, p. 122, (*Xeroleuca*) *subsuta*, p. 123, Morocco; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900: *H. aimophilopsis*, Switzerland; VILLESERRE, Bull. Soc. malac. France ii, p. 15 [1885]: *H. ilicis*, p. 51, *suberis*, p. 54, *evenosi*, p. 56, *euthymeana*, p. 59, *actiella*, p. 62, *ademata*, p. 65, *avenionensis*, p. 67, *tassiana*, p. 70, *salentina*, p. 73, *jusiana*, p. 76, France; LOCARD, t. c. [1885]: *H. szechenyii*, China; ANCEY, t. c. p. 131 [1885]: *H. ergilensis*, p. 232, *sesteri*, p. 233, Diarbekir, *ninivita*, p. 234, Mossoul; GALLAND, t. c. [1885]: *H. oppidi*, p. 273, *transfuga*, p. 275, Lower Pyrenees; FAGOT, t. c. [1885]: *H. knütteli*, Austria, p. 400, *wittmanni*, Russia, p. 408; SERVAIN, op. cit. vi [1889]: n. spp.

*Isomeria subcastanea*, note on, with n. var.; GUDE, J. Malac. vii, p. 144, fig.

*Levantina mardinensis*, Mesopotamia; KOBELT, Nachrbl. Deutsch. malak. Ges. 1900, p. 156: n. sp.

*Metodontia griphodes*, South Kansu; STURANY, Denk. Ak. Wien lxx, p. 23, fig.: n. sp.

*Metostracon*, n. gen. for *M. mima*, n. sp., Mexico; PILSBRY, P. Malac. Soc. London iv, pp. 24-27, fig.

*Platypetatus obrutschewi*, South Kansu; STURANY, Denk. Ak. Wien lxx, p. 26, fig.: n. sp.

*Plectopylis giardi*, note on; FISCHER, Bull. Sci. France Belgique xxxii, p. 329.

*Plectopylis francoisi*, Tonkin; FISCHER, t. c. p. 330: *P. lepida*, Tonkin; GUDE, Ann. Nat. Hist. v, p. 313: *P. jugatoria*, China; ANCEY, Bull. Soc. malac. France ii, p. 127 [1885]: n. spp.

*Plectotropis conica*, Japan; GUDE, Ann. Nat. Hist. vi, p. 400: *P. chondroderma*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 131: *P. comata*, South Kansu; STURANY, Denk. Ak. Wien

- lxx, p. 18, fig.: *P. delectabilis*, *pachysoma*, p. 380, *polyplecta*, p. 379, Japan; EHRMANN, Zool. Anz. xxiii : n. spp.
- Pliocathaica*, n. subgen. of *Cathaica*, type *C. pulveratrix*, Mart.; ANDREAE, Mt. Mus. Hildesheim xii, p. 3.
- Polygyra andrewsæ*, n. var., pp. 123, 125, *edwardsi*, n. var., p. 129, *hirsuta*, n. var., p. 132; PILSBRY, P. Ac. Philad. 1900: *P. hirsuta*, n. var.; PILSBRY, t. c. p. 453: *P. uvulifera*, note on with n. var.; PILSBRY, Nautilus xiii, p. 107.
- Polygyra pilsbryi*, Arkansas; FERRISS, Nautilus xiv, p. 29: n. sp.
- Polygyratia stenostrepta*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 389.
- Polygyratia sargenti*, *affinis*, Peru; PILSBRY, t. c. p. 388: n. spp.
- Psadara derbyi*, Brazil; IHERING, Rev. Mus. Paulista iv, p. 546, fig.: n. sp.
- Satsuma brunnea*, West Japan; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 107: *S. (?) kutupaensis*, South Kansu; STURANY, Denk. Ak. Wien lxx, p. 28, fig.: n. sp.
- Solaropsis*, notes on genus, with anatomy; IHERING (241): *S. heliaca*, anatomy; WIEGMANN, Nachrbl. Deutsch. malak. Ges. 1900, p. 178.
- Solaropsis pilsbryi*, p. 544, *bachi*, p. 545, Brazil; IHERING, Rev. Mus. Paulista iv, figg.: n. spp.
- Sonorella*, n. gen., type *Epiphragmophora hachitana*, Dall, with anatomy; PILSBRY, P. Ac. Philad. 1900, p. 556.
- Stilpnodiscus euphyes*, South Kansu; STURANY, Denk. Ak. Wien lxx, p. 19, fig.: n. sp.
- Thysanophora cæca*, Guppy, radula; SUTER, Rev. Mus. Paulista iv, p. 335: *T. hornii*, note on; PILSBRY, Nautilus xiii, p. 98.
- Trishoplita goodwini*, n. var.; PILSBRY, op. cit. xiv, p. 80: *T. goodwini*, n. var.; PILSBRY & GULICK, t. c. p. 90.
- Trishoplita pallens*, Japan; EHRMANN, Zool. Anz. xxiii, p. 381: *T. cretacea*, p. 400, *dacostæ*, p. 454, Japan; GUDE, Ann. Nat. Hist. vi : n. spp.
- Vallonia pulchella* in California; STEARNS, Nautilus xiv, p. 65.
- Xanthyx* is not a synonym of *Binneya* but belongs to *Helicidæ*, as may *Cryptostracon*; PILSBRY (399).
- Xerocathaica*, n. subgen. of *Cathaica*, type *C. kreitneri*, Hilber; ANDREAE, Mt. Mus. Hildesheim xii, p. 4.

#### BULIMIDÆ, ORTHALICIDÆ, and BULIMULIDÆ.

- Amphidromus* belongs to *Helicidæ*, with review of genus and n. var. of *A. sinensis*, p. 192, of *A. xiengensis*, pp. 195 & 196; PILSBRY in TRYON (529).
- Amphidromus semifrenatus*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 8: *A. placostylus*, Annam; MOELLENDORFF, t. c. p. 132: *A. metabletus*, p. 22, *ingens*, p. 23, Annam; MOELLENDORFF, t. c. : n. spp.
- Bothriembryon*, review of genus, with n. vars. of *B. inflatus*, p. 5, *physoides*, p. 10; PILSBRY in TRYON (529).
- Bulimulus dukinfieldi*, Brazil; MELVILL, P. Malac. Soc. London iv, p. 116, fig.: *B. snodgrassi*, *approximatus*, p. 90, *hoodensis*, p. 91, *indefatigabilis*, p. 92, Galapagos; DALL, P. Ac. Philad. 1900, figg.: *B. (Drymæus) inusitatus*, Costa Rica; FULTON, Nautilus xiv, p. 87: *B. steerei*, p. 391, *hamatospira*, Peru, p. 392; PILSBRY, P. Ac. Philad. 1900: n. spp.
- Bulimus irregularis*, Pfr., note on; JOUSSEAUME, Bull. Soc. Philom. ii, p. 39.
- Bulimus insignior*, p. 242, *servaini*, p. 244, New Caledonia; EUTHYME, Bull. Soc. malac. France ii [1885]: n. spp.
- Callistocharis*, n. sect. of *Placostylus*, type *P. malleatus*; PILSBRY in TRYON (529), p. 102.

- Clavator placostylus*, Madagascar; KOBELT, Nachrbl. Deutsch. malak. Ges. 1900, p. 21: *C. vayssierei*, Madagascar; ANCEY, J. Conchyl. xlviii, p. 12, fig.: n. spp. [Are both synonyms of *Bulimus grandidieri*, Cr. & Fisch.; DAUTZENBERG, J. Conchyl. xlviii, p. 461.]
- Eurytus couturesi*, Bolivia; ANCEY, Nautilus xiv, p. 42: *E. argenteus*, Venezuela; JOUSSEAUME, Bull. Soc. Philom. ii, p. 41, fig.: n. spp.
- Leucocharis*, n. sect. of *Placostylus*, type *P. pancheri*; PILSBRY in TRYON (529), p. 67.
- Pachnodus fagotianus*, Mayotte; ANCEY, Bull. Soc. malac. France ii, p. 144 [1885]: n. sp.
- Partula*, systematic position of, with anatomy of *P. rosea*; PILSBRY (396): *P. rufa*, new varieties; MOELLENDORFF, J. Malac. vii, p. 112.
- Placocharis*, n. sect. of *Placostylus*, type *P. macgillivrayi*; PILSBRY in TRYON (529), p. 77.
- Placostylus*, review of genus, with *P. coxiana*, n. n. for *P. coxi*, Hartman nec Pease, p. 118; PILSBRY in TRYON (529).
- Placostylus heterostylus*, New Hebrides, p. 72, *garretti*, p. 103, hab. unknown; PILSBRY in TRYON (529), figg.: n. spp.
- Plecochilus dalmasi*, Santa Marta; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 151, fig.: n. sp.
- Rhodea*, see post p. 67.
- Strophocheilus paranaguensis* (Pils. & Ihering), Brazil; PILSBRY, P. Ac. Philad. 1900, p. 390, fig.: *S. pilsbryi*, Brazil; IHERING, t. c. p. 394, fig.: n. spp.

## BULIMINIDÆ, CYLINDRELLIDÆ, and PUPIDÆ.

- Bensonella*, n. sect. of *Bifidaria*, type *Pupa plicidens*, Bens.; PILSBRY, P. Ac. Philad. 1900, p. 591 [footnote].
- Berendtia*, note on; PILSBRY, t. c. p. 554.
- Bonnanius*, n. gen. for *B. bouvieri*, n. sp., hab. unknown [apparently Sokotra]; JOUSSEAUME, Bull. Soc. Philom. ii, p. 39, fig.: n. sp.
- Buliminidæ*, monograph continued; KOBELT in MARTINI & CHEMNITZ (311): *B. otiorris*, n. var.; PILSBRY, Nautilus xiv, p. 32.
- Buliminus* (*Napæus*) *simrothi*, Azores; KOBELT in MARTINI & CHEMNITZ (311), p. 659, fig.: *B. bambuseti*, German East Africa; MARTENS, SB. Ges. naturf. Berlin 1900, p. 118: *B. messengeri*, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, pp. 114, 445, fig.: *B. (Petræus) pilsbryanus*, Arabia; ANCEY, Nautilus xiv, p. 43: *B. rugulosus*, West Japan; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 108: *B. hirasei*, p. 32, *callistoderma*, p. 33, Japan; PILSBRY, Nautilus xiv: *B. schypaensis*, p. 28, *obrutschewi*, p. 29, *diaprepes*, *teres*, p. 30, *xerampelinus*, p. 31, *commensalis*, *ottonis*, p. 32, *asaphes*, *amphidoxus*, p. 33, *interstratus*, *euonymus*, p. 34, South Kansu; STURANY, Denk. Ak. Wien lxx, figg.: n. spp.
- Buliminopsis*, anatomy; WIEGMANN (559).
- Bulimus heliocans*, Aden; JOUSSEAUME, Bull. Soc. malac. France vi, p. 346 [1889]: n. sp.
- Cerion stvensoni*, Bahamas; DALL, Nautilus xiv, p. 65: n. sp.
- Clausilia biplicata*, white var.; STANDEN, J. Conch. ix, p. 331: *C. ventricosa*, having two mouths; RIEMENSCHNEIDER, Nachrbl. Deutsch. malak. Ges. 1900, p. 114: *C. postcornea*, n. n. for *C. cornea*, Phil. nec Schroeter; JOUSSEAUME, Bull. Soc. Philom. ii, p. 11: *C. deyrollei* is a synonym of *C. perezi*; JOUSSEAUME, t. c. p. 21: *C. japonica*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 447 [= *oostoma*, Mildf.; PILSBRY, t. c. p. 677]: *C. bidentata*, with two mouths; ORR, J. Conch. ix, p. 374: *C. brevior*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 677.



- Clausilia* (*Phædusa*) *cincticollis*, p. 383, (*P.*) *crassilamellata*, (*P.*) *ijimæ*, p. 382, Japan; EHRMANN, Zool. Anz. xxiii: *C.* (*Euphædusa*) *comes*, p. 673, (*E.*) *monelasmus*, (*E.*) *iotaptyx*, p. 674, (*Tyrannophædusa*, n. sect.) *mikado*, p. 676, (*Stereophædusa*) *hondana*, p. 677, (*S.*) *subjaponica*, p. 678, (*Hemiphædusa*) *nolani*, p. 679, (*H.*) *tosana*, p. 680, (*H.*) *shikokuensis*, p. 681, Japan; PILSBRY, P. Ac. Philad. 1900, figg.: *C. callistomella*, pp. 114, 446, *gereti*, pp. 115, 447, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, figg.: *C. granulosa*, Peru; SYKES, J. Malac. vii, p. 166, fig.: *C.* (*Euphædusa*) *oncauchen*, West Japan; MOELLENDOFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 109: *C. hakonensis*, p. 443, *awajensis*, *subaurantiaca*, p. 444, *aulacophora*, p. 445, *hirasei*, *hyperptyx*, p. 446, Japan; PILSBRY, P. Ac. Philad. 1900, figg.: *C. elatior*, China; ANCEY, Bull. Soc. malac. France ii, p. 134 [1885]: *C. bajamontiana*, p. 198, *bonficoiana*, p. 199, Dalmatia; LETOURNEUX, t. c. [1885]: n. spp.
- Cælocentrum irregulare*, note on, with n. var. of *C. minorinum*; PILSBRY, P. Ac. Philad. 1900, pp. 551, 553, fig.
- Cælocentrum eisenianum*, Lower California; PILSBRY, t. c. p. 553, fig.: n. sp.
- Exbalea*, n. gen. for *Bulea peruviana*, Phil.; JOUSSEAUME, Bull. Soc. Philom. ii, p. 34.
- Hypselostoma annamiticum*, Annam; MOELLENDOFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 133: n. sp.
- Immersidens*, n. sect. of *Bifidaria* for *B. ashmuni* and *perversa*; PILSBRY & VANATTA, P. Ac. Philad. 1900, p. 606.
- Lypopupa*, n. sect. of *Nesopupa* (q.v.) for *Pupa lyrata*, Gld.; PILSBRY, t. c. p. 432.
- Nenia geayi*, p. 14, Venezuela, *archidona*, p. 15, *cocaensis*, p. 16, Ecuador, *rochebrunii*, p. 19, Colombia, *femurina*, p. 21, *auriculina*, p. 22, Ecuador, *versicolor*, p. 25, hab. not given, *cousini*, p. 32, Ecuador; JOUSSEAUME, Bull. Soc. Philom. ii, figg.: n. spp.
- Nesopupa*, n. gen. for *Pupa tantilla*, Gld.; PILSBRY, P. Ac. Philad. 1900, p. 432.
- Pupa iheringi*, subfossil, Brazil; SUTER, Rev. Mus. Paulista iv, p. 336, fig.: n. sp.
- Pupidæ*, review of United States species; PILSBRY & VANATTA (421): Notes on Australian species; PILSBRY (390): On Polynesian species; PILSBRY (391).
- Pupopsis*, n. gen. for *Buliminus pupopsis*, Gredler; STURANY, Denk. Ak. Wien lxx, p. 36. [Author refers to Gredler (Zool. Rec. 1898, no. 161), but genus was not then definitely proposed.]
- Pupopsis dissociabilis*, p. 35, *polystrepta*, *paraplesia*, p. 36, South Kansu; STURANY, t. c. figg.: n. spp.
- Steeriana*, n. gen. for *Clausilia malleolata*, &c.; JOUSSEAUME, Bull. Soc. Philom. ii, p. 33.
- Tyrannophædusa*, n. sect. of *Clausilia*, type *C. mikado*, n. sp.; PILSBRY, P. Ac. Philad. 1900, p. 676.
- Vertigo cubana*, Dall, is a synonym of *Pupa costata*, Pse., and not from Cuba; PILSBRY, t. c. p. 432.
- Vertigo norfolkensis*, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 145, fig.: *V.* (*Ptychochilus*) *ponapica*, Caroline Islands; MOELLENDOFF, J. Malac. vii, p. 113: *V. columbiana* (Sterki MS.), Vancouver and various locs. in U.S.A.; PILSBRY & VANATTA, P. Ac. Philad. 1900, p. 602, fig.: *V. cocosensis*, Cocos I.; DALL, t. c. p. 98, fig.: n. spp.
- Zaptyx*, n. sect. of *Clausilia*, type *C. hirasei*, Pils.; PILSBRY, t. c. p. 672.

## STENOGYRIDÆ and ACHATINELLIDÆ.

- Achatina zebrula*, Transvaal, p. 118, *passargei*, German East Africa, p. 119; MARTENS, SB. Ges. naturf. Berlin 1900 : n. spp.
- Achatinellidæ*, review of the family, with *A. confusa*, n. n. for *A. physa*, Newc. 1855 nec 1854, p. 312; SYKES (509): *Achatinella*, systematic position of, with anatomy of *A. dolei*; PILSBRY (396).
- Achatinella* (*Achatinellastrum*) *wailuaensis*, Maui; SYKES (509), p. 328, fig.: n. sp.
- Amastrella*, n. subgen. of *Amastra* for *A. rugulosa*, Pease; SYKES (509), p. 352.
- Auriculella perkinsi*, Oahu; SYKES (509), p. 377, fig.: n. sp.
- Cæcilioides acicula*, notes on; ADAMS, J. Conch. ix, p. 297.
- Digoniaxis*, n. gen. for *D. bourguignati*, n. sp.; JOUSSEAUME, Bull. Soc. malac. France vi, p. 348 [1889].
- Ganomidos fraterculus*, Congo Free State; DUPUIS & PUTZEYS, Ann. Soc. malac. Belgique xxxv, Bull. p. xiii, fig.: n. sp.
- Kauaia*, n. n. for *Carinella*, Pfr. nec Sby.; SYKES (509), p. 355.
- Leptachatina acuminata*, Gould, radula; GODWIN-AUSTEN in SYKES (509), p. 357.
- Leptachatina arborea*, p. 357, Hawaii, *conicoides*, p. 359, Molokai, *convexiuscula*, p. 360, Oahu, *emerita*, p. 361, Molokai, *imitatrix*, *konaensis*, p. 364, Hawaii, *supracostata*, p. 370, Lanai, *vana*, p. 371, Oahu; SYKES (509), figg.: n. spp.
- Leptinaria* (*Neosubulina*) *martensi*, Cocos I.; DALL, P. Ac. Philad. 1900, p. 97, fig.: n. sp.
- Limicolaria oviformis*, Arabia; ANCEY, Nautilus xiv, p. 42: *L. bourguignati*, p. 157, *spekiana*, *burtoniana*, p. 160, *bridouxii*, p. 161, Central Africa; GRANDIDIER, Bull. Soc. malac. France ii [1885]: n. spp.
- Opeas pruinoseum*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 114: n. sp.
- Perdicella fulgurans*, Maui; SYKES (509), p. 329, fig.: n. sp.
- Perideriopsis fallsensis*, p. xiii, *mvulaensis*, p. xiv, Congo Free State; DUPUIS & PUTZEYS, Ann. Soc. malac. Belgique xxxv, Bull., figg.: n. spp.
- Rhodesia cousini*, p. 36, *equatorensis*, p. 37, Ecuador, *gereti*, p. 38, Colombia; JOUSSEAUME, Bull. Soc. Philom. ii, figg.: n. spp.
- Tornatellina ovatula*, *pusilla*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 114: *T. compacta*, Hawaii, *confusa*, Kauai, p. 380, *cylindrica*, Oahu and Kauai, p. 381, *perkinsi*, Kauai, p. 382, *trochoides*, Lanai, p. 383; SYKES (509), figg.: n. spp.

## SUCCINEIDÆ, and VERONICELLIDÆ.

- Atopos* (*Padangia*, n. subgen.) *schildii*, Sumatra; BABOR, Ann. Hofmus. Wien xv, p. 100: n. sp.
- Padangia*, n. subgen. of *Atopos* for *A. schildii*, n. sp.; BABOR, t. c. p. 100.
- Succinea campestris*, n. var.; PILSBRY, Nautilus xiv, p. 74.
- Succinea* (*rusticana*, var. ?) *guadelupensis*, Guadelupe I.; DALL, P. Ac. Philad. 1900, p. 102, fig.: *S. protracta*, Hawaii, SYKES (509), p. 388, fig.: n. sp.
- Triboniophorus*, anatomy; PFEIFFER, Zool. Jahrb. Anat. xiii, pp. 293-358, fig.
- Veronicella*, notes on; COCKERELL, Nautilus xiii, p. 131.

*Veronicella gilsoni*, Fiji Islands; COLLINGE, J. Malac. vii, p. 179: *V. willeyi*, Lifu, p. 431, *brunnea*, Esafate, p. 435; COLLINGE in WILLEY's Zool. Results, pt. iv, figg. : n. spp.

## BASOMMATOPHORA.

### AURICULIDÆ, LIMNÆIDÆ, and PHYSIDÆ.

- Alexia myosotis*, n. var.; PILSBRY, Nautilus xiv, p. 40.  
*Alexia* (*Kochia*, n. sect.) *oranica*, p. 240, (*Pseudomelampus*, n. sect.) *kochi*, (*P.*) *jolyi*, p. 241, Oran; PALLARY, J. Conchyl. xlviii, first two figg. : n. spp.  
*Ancylus fluviatilis*, note on; CROWTHER, Halifax Natural. v, pp. 56 & 57.  
*Ancylus sharpi*, Oahu; SYKES (509), p. 394, fig.: n. sp.  
*Auriculina*, n. sect. of *Auricula*, type *A. gangetica*, Bens.; KOBELT in MARTINI & CHEMNITZ, *Auriculacea*, p. 77 [1898].  
*Carychium minimum*, notes on; ADAMS, J. Conch. ix, p. 301.  
*Kochia*, n. sect. of *Alexia* for *A. denticulata*, Mont., and others; PALLARY, J. Conchyl. xlviii, p. 239.  
*Limnæa*, variation of; JOHANSEN (247): *L. stagnalis*, development of; DYBOWSKI, Nachrbl. Deutsch. malak. Ges. 1900, pp. 111-114: *L. mighelsi*, habits of; WALKER, Nautilus xiv, p. 8: *Limnæa*, note on 'hybrids'; WEBB, Sci. Gossip vi, p. 280: *L. binominis*, n. n. for *Physa sandwichensis*, Clessin; SYKES (509), p. 391: *L. stagnalis* and *L. auricularia*, cross between; CHASTER, J. Conch. ix, p. 282: *L. burnetti* and *L. involuta*, notes on; ADAMS, t. c. p. 299: *L. intermedia* and *marginata*, notes; LOCARD, Bull. Soc. malac. France ii, p. 79 [1885].  
*Melampus biscayensis*, Gulf of Gascony; FISHER, J. Conchyl. xlviii, p. 68, fig.: *M. strigosus*, W. Costa Rica; MARTENS, Biol. Centr.-Amer. p. 561, fig.: n. spp.  
*Physa*, notes on Illinois species, with radula of *P. gyrina*; BAKER (23): *P. moussoni*, n. n. for *P. lirata*, Mousson nec Tristram; ANCEY, Nautilus xiv, p. 83.  
*Planorbis*, early development; HOLMES (234): *P. corpulentus*, Say, is a good species; WALKER, Nautilus xiii, p. 133: supplemental note on; WALKER, op. cit. xiv, p. 33.  
*Planorbis persicus*, Persia; ANCEY, t. c. p. 83: *P. exarescens*, *neumayri*, Central Asia; STURANY, Denk. Ak. Wien lxx, p. 38, figg. : n. spp.  
*Pseudomelampus*, n. sect. of *Alexia* for *Melampus exiguus*, Lowe, and others; PALLARY, J. Conchyl. xlviii, p. 240.

### SIPHONARIIDÆ, GADINIIDÆ, AND AMPHIBOLIDÆ.

- Ampullarina*, auct. nec Sby., renamed *Salinator*, q. v.  
*Gadinea requieni*, Mediterranean; LOCARD, Echange xvi, p. 75: n. sp.  
*Salinator*, n. n. for *Ampullarina*, auct. nec Sby.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 511.  
*Scutulum*, Monts., renamed *Williamia*, q. v.  
*Siphonaria henica*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 524, fig.: n. sp.  
*Williamia*, n. n. for *Scutulum*, Monts. nec Tournouer; MONTEROSATO (584), p. 150.

## OPISTHOBRANCHIATA.

Opisthobranchs, classification; GUIART (207).

## NUDIBRANCHIATA.

- Æolidiella drusilla*, p. 233, *faustina*, p. 235, New Zealand; BERGH, Zool. Jahrb. Syst. xiii, figg. : n. spp.
- Aldisa zetlandica*, figure and anatomy; BERGH (38).
- Ancylodoris baicalensis*, Lake Baikal; DYBOWSKI, Nachrbl. Deutsch. malak. Ges. 1900, p. 143, fig. : n. sp.
- Archidoris nyctea*, Bare-Island, Vancouver; BERGH, Zool. Jahrb. Syst. xiii, p. 222, fig. : n. sp.
- Atthila ingolfiana*, n. gen. and sp., S. W. of Iceland, forms also n. fam. *Atthilidæ*; BERGH, Danish Ingolf-Exped. ii, No. 3, p. 23, fig.
- Bathydoris ingolfiana*, Davis Strait; BERGH, t. c., No. 3, p. 8, fig. : n. sp.
- Candiella ingolfiana*, S. W. of Iceland; BERGH, t. c., No. 3, p. 19, fig. : n. sp.
- Chromodoris* (?) *roseopicta*, Bermudas; VERRILL, Tr. Connect. Ac. x, p. 549, fig. : n. sp.
- Coryphella* (?) *pallida*, Bermudas; VERRILL, t. c. p. 547: n. sp.
- Discodoris tristis*, Azores; BERGH, Result. Camp. Scient. xiv, p. 11: n. sp. [apparently new, but not so marked].
- Doridoxa ingolfiana*, n. gen. and sp., Davis Strait, forms also n. fam. *Doridoxidæ*; BERGH, Danish Ingolf-Exped. ii, No. 3, p. 16, fig.
- Doris* (?) *bistellata*, *olivacea*, Bermudas; VERRILL, Tr. Connect. Ac. x, p. 548, first figd. : n. spp.
- Euplocamus atlanticus*, anatomy; BERGH (38).
- Fiona marina*, radula; BERGH (38): *F. nobilis*, radula; TEMPÈRE (523).
- Glaucus atlanticus*, note on; BERGH (38).
- Goniöolis intermedia*, p. 36, *atypica*, p. 37, Davis Strait; BERGH, Danish Ingolf-Exped. ii, No. 3, figg. : n. spp.
- Lamelldoris lactea*, p. 548, (?) *quadrimaculata*, p. 549, Bermudas; VERRILL, Tr. Connect. Ac. x, last figd. : n. spp.
- Platydoris argo*, anatomy; BERGH (38).
- Samla*, n. gen. for *S. annuligera*, n. sp., Laysan Island; BERGH, Zool. Jahrb. Syst. xiii, p. 237, fig.

## TECTIBRANCHIATA.

- Tectibranchiata*. Anatomy, classification and phylogeny; GUIART, Causeries Scient. Soc. Zool. France 1900, No. 4, pp. 77-132, figg.
- Morphology of Tectibranchs; MAZZARELLI (323).
- Aplysia*, embryology; CARAZZI (79-82); GEORGEVITCH (184); MAZZARELLI (320-322): Nervous system; GUIART (208): Radula; TEMPÈRE (523): Visceral nervous system; BOTTAZZI & ENRIQUES, Arch. ital. Biol. xxxiv, pp. 111-143.
- Aplysia megaptera*, Bermudas; VERRILL, Tr. Connect. Ac. x, p. 545, fig. : n. sp.
- Bulla bermudæ*, Bermudas; VERRILL & BUSH, t. c., p. 523, fig. : n. sp.
- Chelinodura plebeia*, Pacific Ocean; BERGH in SEMPER'S Reisen im Arch. Philippinen, Wiss. Result. iv, p. 179, fig. : n. sp.



- Cylichnina*, n. gen. for *Cylichna lævisculpta*, Granata, etc.; MONTEROSATO (584), p. 143.
- †*Hamlinia*, n. g. of *Actæonidæ* for *Natica olivæ*, Fraas, and others; BÖHM, Zeitschr. Deutsch. geol. Ges. lii, p. 214.
- Hermania*, n. sect. for *Bulla scabra*, Mull.; MONTEROSATO (584), p. 147.
- Joannisia*, n. gen. for *Tylodina citrina*, Joannis; MONTEROSATO (584), p. 149.
- Johania*, n. gen. for *Bulla retifera*, Forbes; MONTEROSATO (584), p. 147.
- Marsenia perspicua*, varieties; BERGH (38), p. 37.
- Marsenia leptolemma*, with anatomy, Azores; BERGH (38), p. 31, fig.: n. sp.
- Micrella*, n. gen. for *M. dubia*, n. sp., with anatomy, between Madeira and Azores; BERGH (38), p. 28, fig.
- Notarchus glaucus*, animal; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 97.
- Oscaniopsis amboinei*, Amboina; VAYSSIÈRE, J. Conchyl. xlviii, p. 9: n. sp.
- Oscanius*, note on genus with anatomy of *O. membranaceus*; BERGH (38).
- Ossiania*, n. sect. for *Philine monterosatoi*, Jeff.; MONTEROSATO (584), p. 147.
- Paraplysia lowii*, S. Africa; GILCHRIST, Tr. S. Africa Soc. xi, p. 122, fig.: n. sp.
- Pelta coronata*, 'embryogenic condensation' in; VAYSSIÈRE, Zool. Anz. xxiii, p. 286.
- Phyllaplysia taylori*, Vancouver Island; DALL, Nautilus xiv, p. 92: *P. pacifica*, Ralum; BERGH in SEMPER's Reisen im Arch. Philippinen, Wiss. Result. iv, p. 182, fig.: n. spp.
- Pleurobranchæa*, anatomy; BERGH (38).
- Pleurobranchæa capensis*, Cape of Good Hope; VAYSSIÈRE, J. Conchyl. xlviii, p. 10: n. sp.
- Pleurobranchopsis*, n. gen. for *P. aurantiaca*, n. sp., Bermudas; VERRILL, Tr. Connect. Ac. x, p. 547, fig.
- Pleurobranchus californicus*, California; DALL, Nautilus xiv, p. 92: n. sp.
- Pneumodermon*, development of; CARAZZI (81).
- Psyche*, Rang, renamed *Verillopsyche*, q. v.
- Ringicula kochiana*, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 129, fig.: n. sp.
- Ringiculina*, n. gen. for *Ringicula leptocheila*, Brugn.; MONTEROSATO (584), p. 141.
- Roxamella*, n. sect. for *Cylichna jeffreysi*, Weink.; MONTEROSATO (584), p. 145.
- Scaphander multistriatus*, Braz., figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 510.
- Tornatina decurrens*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 523, fig.: n. sp.
- Verrillopsyche*, n. n. for *Psyche*, Rang nec Linn.; COSSMANN, Rev. paleozool. iv, p. 43.
- Volvula persimilis*, Mörch, note on with fig.; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 155.

## NUCLEOBRANCHIATA.

*Pterotrachea*, organs of hearing; SOLGER, Schr. Ges. Danzig x, p. 65.

## PROSOBRANCHIATA.

Gonads in the Prosobranchs ; HALLER (213, 214).

## PECTINIBRANCHIATA.

## TOXOGLOSSA.

## TEREBRIDÆ, CONIDÆ, and PLEUROTOMIDÆ.

- †*Catenotoma*, n. sect. of *Surcula*, for *S. catenata* (Lamk.), Eocene ; COSSMANN in COSSMANN & PISSARRO, Bull. Soc. geol. Normand. xix, p. 39.
- Cirillia*, n. sect. for *Pleurotoma linearis*, Mont. ; MONTEROSATO (584), p. 133.
- Cithara cognata*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 103, fig. : n. sp.
- Clathromangelia*, n. sect. for *Pleurotoma granum*, Phil. ; MONTEROSATO (584), p. 131.
- Clathurella legrandi*, Bedd., figd. ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 509 ; *C. atropurpurea*, Monts. MS., n. n. for *C. purpurea*, auct. nec Montagu ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlvi, p. 245.
- Clathurella cylindrica*, Monts. MS., Corsica ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlvi, p. 248 ; *C. sexdentata*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 104, fig. : n. spp.
- Conus*, review of the group of *C. textile* ; MELVILL (327) : *C. consors*, Sby., note on ; WHEELER, Nautilus xiv, p. 86 ; *C. dalli*, Stearns, note on ; DAUTZENBERG, J. Conchyl. xlviii, p. 190.
- Conus grangeri*, hab. query ; SOWERBY, Ann. Nat. Hist. v, p. 441, fig. : *C. cholmondeleyi*, hab. unknown ; MELVILL, J. Conch. ix, p. 308, fig. : n. spp.
- Cordieria*, n. gen. for *Pleurotoma reticulata*, Ren., etc. ; MONTEROSATO (584), p. 131.
- Crossopleura*, n. gen. for *Pleurotoma maravignæ*, Payr. ; MONTEROSATO (584), p. 127.
- Drillia gabrieli*, p. 100, *howitti*, p. 101, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, figg. : *D. rhodochroa*, Rio Hacha, Santa-Marta, p. 165, *chazaliei*, Cumana, Rio Hacha, Santa-Marta, p. 166, *claudoni*, Rio Hacha, p. 167, *jousseau mei*, Santa-Marta, p. 168 ; DAUTZENBERG, Mem. Soc. zool. France xiii, figg. : n. spp.
- Eurytus*, H. & A. Ad. nec Gistel, renamed *Mazatlaniana*, q. v.
- Ginnania*, n. sect. for *Pleurotoma fuscata*, Phil. ; MONTEROSATO (584), p. 127.
- Glyphostoma rugilabrum*, Cebu ; SOWERBY, P. Malac. Soc. London iv, p. 127, fig. : n. sp.
- Halia priamus*, anatomy ; POIRIER, Bull. Soc. malac. France ii, p. 17 [1885].
- Leufroyia*, n. gen. for *Pleurotoma leufroyi*, Mich., etc. ; MONTEROSATO (584), p. 134.
- Mangelia difficilis*, Monts. MS., Corsica ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlvi, p. 243 ; *M. flaccida*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 102, fig. : n. spp.
- Mazatlaniana*, n. n. for *Eurytus*, H. & A. Ad. nec Gistel ; DALL, Nautilus xiv, p. 44.
- Mitromorpha flindersi*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 104, fig. : n. sp.

- Philbertia*, n. sect. for *Pleurotoma bicolor*, Risso, etc.; MONTEROSATO (584), p. 132.  
*Smithia*, n. sect. for *Pleurotoma striolata*, Sc.; MONTEROSATO (584), p. 128.  
*Terebra fictilis*, Hinds, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 509.  
*Terebra apicincta*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 5, fig.: n. sp.  
*Vielliersia*, n. sect. for *Pleurotoma attenuata*, Mont.; MONTEROSATO (584), p. 128.

## RACHIGLOSSA.

## OLIVIDÆ, MARGINELLIDÆ, VOLUTIDÆ, and MITRIDÆ.

- Ancilla osculata*, Pondoland; SOWERBY, P. Malac. Soc. London iv, p. 3, fig.: n. sp.  
*Bullata*, Jousseaume, renamed *Gibberulina*, q. v.  
*Fuscomitra*, Monts. MS., n. sect. of *Mitra* for *M. fusca*, Rve.; PALLARY, J. Conchyl. xlvi, p. 263.  
*Gibberulina*, n. n. for *Bullata*, Jousseaume; MONTEROSATO (584), p. 139.  
*Marginella tenisoni*, n. n. for *M. cypræoides*, T. Woods nec Anton; PRITCHARD, Victorian Natural. xvii, p. 55.  
*Marginella ringicula*, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 126, fig.: *M. whani*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 137, fig.: *M. cratericula*, *multiplicata*, p. 91, *biplicata*, Tasmania, *simsoni*, Tasmania and S. Australia, p. 92, *mayii*, Tate, *ovuliformis*, p. 93, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv : n. spp.  
*Mitra obtusa*, apparently n. n. for *M. cornicula*, pars; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlvi, p. 232.  
*Mitra* (*Callithea*) *alabaster*, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 126, fig.: *M. bathyraphe*, *canaliculata*, *euzonata*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 4, figg. : n. spp.  
*Neptuneopsis gilchristi*, anatomy; WOODWARD (570).  
*Turricula scalariformis*, T. Woods, figd.; HEDLEY, Rec. Austral. Mus. iii, p. 218.  
*Volutidæ*, notes on radula; DALL, Science xii, p. 824: *V. ancilla*, anatomy; WOODWARD (570): *V. scapha*, sinistral; SOWERBY, P. Malac. Soc. London iv, p. 45.  
*Voluta uniplicata*, Japan, p. 439, (*Lyria*) *grangeri*, p. 440, hab. query; SOWERBY, Ann. Nat. Hist. v, figg. : n. spp.  
*Volutilithes abyssicola*, anatomy; WOODWARD (570).

FASCIOLARIIDÆ, BUCCINIDÆ, NASSIDÆ, COLUMBELLIDÆ,  
and MURICIDÆ.

- Buccinum*, radula; TEMPÈRE (523).  
*Buccinum brucei*, Franz-Josef Land; MELVILL & STANDEN, Mem. Manchester Soc. xlv, No. 4, p. 9, fig.: n. sp.  
*Bullia capensis*, Cape of Good Hope; EUTHYME, Bull. Soc. malac. France ii, p. 237 [1885]: n. sp.  
*Cantharus kingicola*, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 91: n. sp.  
*Chauvetia*, n. n. for *Nesæa*, Risso nec Lamarck; MONTEROSATO (584), p. 137.  
*Columbella nanisca*, n. n. for *C. nana*, Dunker nec Michaud; HERVIER, J. Conchyl. xlvii, p. 363 [1899].

- Columbella (Seminella) aliciae*, Oran ; PALLARY, J. Conchyl. xlviii, p. 279, fig. : *C. filmeræ*, Pondoland, *beckeri*, The Kowie ; SOWERBY, P. Malac. Soc. London iv, p. 3, figg. : n. spp.
- Cyclope westerlundii*, Greece ; BRUSINA, Nachrbl. Deutsch. malak. Ges. 1900, p. 89 : n. sp.
- Donovania fenestrata*, Tasmania ; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 94 : n. sp.
- Euthria interrupta*, Japan ; SOWERBY, Ann. Nat. Hist. v, p. 441, fig. : *E. filmeræ*, *eburnea*, Pondoland ; SOWERBY, P. Malac. Soc. London iv, p. 1, figg. : n. spp.
- Folinæa*, n. sect. for *Buccinum lefebvrii*, Maravigna ; MONTEROSATO (584), p. 136.
- Megalatractus aruanus*, L., note on ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, pp. 98, 508.
- Murex*, notes on some species ; KENYON, P. Malac. Soc. London iv, p. 39.
- Murex marcoensis*, Florida ; SOWERBY, J. Malac. vii, p. 162, fig. : *M. petri*, California ; DALL, Nautilus xiv, p. 37 : n. spp.
- Nassa*, radula ; TEMPÈRE (523).
- Nassa filmeræ*, Pondoland ; SOWERBY, P. Malac. Soc. London iv, p. 2, fig. : *N. coralligena*, Oran ; PALLARY, J. Conchyl. xlviii, p. 275, fig. : *N. corrupta*, Monts. MS., Corsica ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xvi, p. 260 : n. spp.
- Nesæa*, Risso, renamed *Chauvetia*, q. v.
- Ocenebra kochiana*, Cebu ; SOWERBY, P. Malac. Soc. London iv, p. 126, fig. : n. sp.
- Orania*, n. subgen. of *Murex* for *M. spadæ*, Libassi ; PALLARY, J. Conchyl. xlviii, p. 285.
- Pagodula*, n. sect. for *Murex carinatus*, Biv. ; MONTEROSATO (584), p. 116.
- Pardalina*, n. g. of *Columbellidæ*, type *C. pardolina* [sic] ; JOUSSEAUME, Mem. Soc. zool. France i, p. 177 [1888].
- Phos chazaliei*, Testigos Is., Santa-Marta ; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 181, fig. : n. sp.
- Poweria*, n. gen. for *Murex scalarinus*, Biv. ; MONTEROSATO (584), p. 113.
- Pseudofusus*, n. sect. for *Murex rostratus*, Olivi, etc. ; MONTEROSATO (584), p. 117.
- Siphonalia pfefferi*, Japan ; SOWERBY, Ann. Nat. Hist. v, p. 440, fig. : n. sp.
- Sistrum nicocheanum*, Argentina ; PILSBRY, Nautilus xiv, p. 3 : n. sp.
- Tritonidea insculpta*, The Kowie ; SOWERBY, P. Malac. Soc. London iv, p. 2, fig. : n. sp.
- Trophon* (?) *insignis*, The Kowie ; SOWERBY, t. c. p. 2, fig. : n. sp.

## TÆNIOGLOSSA.

## LOTORIIDÆ, CASSIDIDÆ, DOLIIDÆ, CYPRÆIDÆ, and STROMBIDÆ.

- Amphiperas beckeri*, Pondoland ; SOWERBY, P. Malac. Soc. London iv, p. 5, fig. : n. sp.
- Cassid booleyi*, Andaman Islands ; SOWERBY, J. Malac. vii, p. 163, fig. : *C. craticulatus*, Cape of Good Hope ; EUTHYME, Bull. Soc. malac. France ii, p. 250 [1885] : n. spp.
- Cypræa kawilani* is probably a var. of *C. helvola* ; ANON, J. Conch. ix, p. 377.
- Cypræa kawilani*, Hawaiian Islands ; KENYON, P. Malac. Soc. London iv, p. 68, fig. : *C. (Trivia) galapagensis*, Galapagos, p. 208, (*T.*) *buttoni*, hab. query, p. 209 ; MELVILL, Ann. Nat. Hist. iv, figg. : n. spp.



- Dolium procellarum*, Cape of Good Hope ; EUTHYME, Bull. Soc. malac. France ii, p. 247 [1885]: n. sp.  
*Erato denticulata*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 133, fig.: n. sp.  
*Gibberulus*, n. g., type *Strombus gibberulus*, Gmel.; JOUSSEAUME, Mem. Soc. zool. France i, p. 174 [1888].  
*Lampusia nodocostata*, Tasmania ; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 90 : n. sp.  
*Simpulidæ*, proposed to replace *Tritonidæ* ; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 189.  
*Strombus belutschiensis*, notes on ; SMITH, P. Malac. Soc. London iv, p. 43.  
*Trivia acutisulcata*, hab. unknown ; KENYON, t. c. p. 69, fig.: n. sp.

CERITHIIDÆ, MODULIDÆ, TRICHOTROPIDIDÆ, TURRITELLIDÆ  
and CÆCIDÆ.

- Bittium variegatum*, Braz., is a synonym of *Cerithium tenue*, Sby. ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 96.  
*Cæcum tenue, tornatum*, p. 537, *obesum, delicatulum, debile*, p. 538, *crispum*, p. 539, Bermudas ; VERRILL & BUSH, Tr. Connect. Ac. x, fig. : n. spp.  
*Cerithidium*, n. gen. for *Cerithium submamillatum*, Rayn. ; MONTEROSATO (584), p. 123.  
*Cerithiopsis bermudensis*, Bermudas ; VERRILL & BUSH, Tr. Connect. Ac. x, p. 536, fig.: *C. caledonicus*, New Caledonia ; EUTHYME, Bull. Soc. malac. France ii, p. 255 [1885] : n. spp.  
*Cinctella*, n. gen. for *Cerithium trilineatum*, Phil. ; MONTEROSATO (584), p. 123.  
*Colpospira*, n. sect. of *Turritella*, type *T. runcinata*, Watson ; DONALD, P. Malac. Soc. London iv, p. 51.  
†*Coronaria*, Kittl, renamed *Stephanocosmia*, q. v.  
†*Euthystylus*, n. n. for *Orthostylus*, Kittl nec Beck ; COSSMANN (582), p. 63.  
†*Goniogyra*, Kittl, renamed *Goniospira*, q. v.  
†*Goniospira*, n. n. for *Goniogyra*, Kittl nec Agassiz ; COSSMANN (582), p. 62.  
†*Heterogyra*, n. gen. for *H. ladina*, n. sp., Trias ; KITTL, Ann. Hofmus. Wien xiv, p. 184.  
*Metaxia*, n. gen. for *Cerithium rugulosum*, Sby. ; MONTEROSATO (584), p. 125.  
*Modulus guernei*, Cape Verd Is. ; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 197, fig.: n. sp.  
†*Orthostylus*, Kittl, renamed *Euthystylus*, q. v.  
*Parastilbe*, n. n. for *Stilbe*, Jeffreys nec DeKay ; COSSMANN, Rev. paleozool. iv, p. 43.  
*Platycolpus*, doubtfully proposed as n. sect. of *Turritella* for *T. quadrata*, n. sp. ; DONALD, P. Malac. Soc. London iv, p. 54.  
†*Pustularia*, Koken, renamed *Pustulifer*, q. v.  
†*Pustulifer*, n. n. for *Pustularia*, Koken nec Swainson ; COSSMANN (582), p. 65.  
*Rhinocoryne*, n. subgen. of *Potamides*, type *P. pacificus*, Sow. ; MARTENS, Biol. Centr.-Amer. pp. 567, 574.  
*Seila attenuata*, N. S. Wales ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 91, fig.: n. sp.  
*Sirius*, n. gen. for *Raulinia badia*, T. Woods ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 88.  
†*Stephanocosmia*, n. n. for *Coronaria*, Kittl nec Fabr. ; COSSMANN (582), p. 62.

*Stilbe*, Jeffreys, renamed *Parastilbe*, q. v.

*Thylacodes caperatus*, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 94: n. sp.

*Turritellidæ*, on the family, with n. var. of *T. quadrata*; DONALD, P. Malac. Soc. London iv, pp. 47-55: Anatomy of *T. communis* and radula of *T. australis*; RANGLES, t. c. pp. 56-65.

*Turritella atkinsoni*, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 95: *T. kowiensis*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 6, fig.: *T. (Colpospira, n. sect.) smithiana, crenulata*, off Sydney, p. 53, *godeffroyana, quadrata* [*Platycolpus* doubtfully proposed for this as n. sect., p. 54], Bass Strait, p. 53; DONALD, P. Malac. Soc. London iv, figg.: n. spp.

PSEUDOMELANIIDÆ, MELANIIDÆ, PLEUROCERIDÆ, LITTORINIDÆ,  
and FOSSARIDÆ.

*Brotella*, Rovereto, renamed *Paracrostoma*, q. v.

*Cenchritis*, n. subgen. of *Littorina*, type *L. muricata*, Linn.; MARTENS, Biol. Centr.-Amer. pp. 575, 578.

†*Centrogonia*, n. gen. for *C. cureti*, n. sp., Cretaceous, France; COSSMANN, C.R. Ass. France 1899, p. 400.

*Couthouyia aculeata*, Torres Straits; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 89, fig.: n. sp.

*Cremnoconchus messengeri*, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, pp. 116, 449, fig.: n. sp.

†*Eustylus*, Kittl, renamed *Trypanostylus*, q. v.

*Fossarus sydneyensis*, N. S. Wales; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 89, fig.: n. sp.

*Goniobasis plebeius*, note on, with fig.; PILSBRY, P. Ac. Philad. 1900, p. 458.

†*Gradiella*, n. subgen. of *Cælostylina* for *Chemnitzia gradata*, Hoernes, etc., Trias; KITTL, Ann. Hofmus. Wien xiv, p. 146.

*Io*, variation in; ADAMS, P. Amer. Ass. xlix, p. 208.

*Lacuna puteolus*, notes on; BYNE, J. Conch. ix, p. 341.

*Lavigeria lechaptosi*, Ancey, is a variety of *L. nassa*; DAUTZENBERG, J. Conchyl. xlviii, p. 81.

*Lithasia obovata*, note on growth of; WALKER, Nautilus xiii, p. 97.

*Littorina*, radula of; TEILMAN-FRIIS (522): TEMPÈRE (523).

*Melania reducta*, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, pp. 118, 451, fig.: *M. indragirica*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 10: *M. ponthiervillensis*, p. xv, *nyangweensis, depravata*, p. xvi, *nsendweensis*, p. xvii, *soror, consobrina*, p. xviii, *kinshassensis*, p. xix, Congo Free State; DUPUIS & PUTZEYS, Ann. Soc. malac. Belgique xxxv, Bull. figg.: n. spp.

†*Mesospira*, n. subg. of *Pseudomelania*, type *Phasianella leymeriei*, d'Arch.; COSSMANN, Bull. Soc. geol. France xxvii, p. 559.

†*Microchilus*, Kittl, renamed *Pseudocochlearia*, q. v.

*Micronyassa*, n. gen. for *Melania turritispira*, Smith, and others; BOURGUIGNAT, Bull. Soc. malac. France vi, p. 24 [1889].

*Nyasella*, n. gen. for *N. smithi*, n. sp., and others; BOURGUIGNAT, t. c. p. 17 [1889].

*Nyassia*, n. gen. for *Melania nodocincta*, Dohrn, and others; BOURGUIGNAT, t. c. p. 5 [1889].

*Nyassomelania*, n. gen. for *N. leia*, n. sp., and others; BOURGUIGNAT, t. c. p. 30 [1889].

†*Ochetochilus*, n. g., type *O. subvaricosus*, n. sp., from the Bathonian of Saint-Gaultier; COSSMANN, Bull. Soc. geol. France xxvii, p. 556.

*Pachycheilus*, see last year at p. 67.

*Paracrostoma*, n. n. for *Brotella* (1899) nom. preocc.; COSSMANN, Rev. paleozool. iv, p. 42.

*Pleurocera elevatum*, note on, with figg.; PILSBRY, P. Ac. Philad. 1900, p. 457.

+*Pseudocochlearia*, n. n. for *Microchilus*, Kittl nec Blanch.; COSSMANN (582), p. 64.

*Pseudorbis*, n. gen. for *Fossarus granulus*, Brugn.; MONTEROSATO (584), p. 109.

+*Trypanostylus*, n. n. for *Eustylus*, Kittl nec Schönh.; COSSMANN (582), p. 63.

+*Tuberculopectura*, n. g. for *T. kulogoræ*, n. sp., and others; JAKOWLEW, Trudui geol. Kom. xv, No. 3, 1899, p. 58.

# SOLARIIDÆ, RISSOIDÆ, HYDROBIIDÆ, VIVIPARIDÆ, VALVATIDÆ, AMPULLARIIDÆ, and ASSIMINEIDÆ.

*Actonia*, n. sect. of *Alvania* for *Rissoa testæ*, A. & M., etc.; MONTEROSATO (584), p. 61.

*Ampullaria brohardi* is a monstrosity, and *pagoda* a synonym, of *polita*; SMITH, P. Malac. Soc. London iv, p. 40.

*Architectonicidae*, proposed to replace *Solariidæ*; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 201.

*Assiminea andrewsiana*, Christmas Island; SMITH, Monograph of Christmas Island, p. 59, fig.: n. sp.

*Chileutomia*, see under *Menon* in *Eulimidae*.

*Lithoglyphus tonkinianus*, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, pp. 117, 450, fig.: n. sp.

*Paludestrina norfolkensis*, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 146, fig.: n. sp.

*Petterdiana thaunumi*, Queensland; PILSBRY, Nautilus xiii, p. 144: n. sp.

*Pomatiopsis hirasei*, Japan; PILSBRY, op. cit. xiv, p. 12: n. sp.

*Pusillina*, n. gen. for *Rissoa pusilla*, Phil.; MONTEROSATO (584), p. 56.

*Rissoia*, radula of; TEILMAN-FRIIS (522): *R. perexigua*, n. n. for *R. minutissima*, Woods nec Michelin; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 100: *R. maccoyi*, T. Woods, *tenisoni*, Tate, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 505.

*Rissoa (Manzonina) minuscula*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 540, fig.: *R. (Apicularia) demessa*, p. 98, (*A. apicilirata*, (*Pusillina*) *discrepans*, p. 99, Tasmania, (*Amphithalamus*) *simsoni*, Tasmania and Victoria, (*Cingula*) *rubicunda*, (*Nodulus*) *pellucida*, Tasmania, p. 100; TATE & MAY, Tr. R. Soc. S. Austral. xxiv: n. spp.

*Rissoopsis buliminoides, consobrina*, Tasmania; TATE & MAY, t. c. p. 101: n. spp.

*Stenothyra messengeri*, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, pp. 116, 448, fig.: n. sp.

*Valvata kunkunorica*, Nan-shan; STURANY, Denk. Ak. Wien lxx, p. 39, fig.: n. sp.

*Vivipara auriculata*, of which *V. rusiostoma* is a synonym, figd.; SMITH, J. Malac. vii, p. 159.

*Vivipara penangensis*, Penang; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 18: *V. wingatei*, Hunan; SMITH, J. Malac. vii, p. 158, fig.: n. spp.

## CYCLOPHORIDÆ and CYCLOSTOMATIDÆ.

- Acroptychia pyramidalis*, Madagascar; SYKES, J. Malac. vii, p. 165, fig.: n. sp.
- Adelopoma*, note on; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 154.
- Alycæus requiescens*, Mabille, is a synonym of *A. pilula*, Gld.; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, p. 457.
- Alycæus* (*Orthalycæus*) *sumatranus*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 6: *A. (Dioryx) major*, pp. 118, 452, (*D.*) *messengeri*, pp. 119, 453, (*D.*) *compactus*, pp. 119, 454, (*D.*) *vanbuenensis*, pp. 120, 455, (*Charax*) *fraterculus*, pp. 120, 457, (*C.*) *heudei*, pp. 121, 458, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, figg.: *A. hari-mensis*, *reinhardtii*, p. 381, *melanopoma*, *hirasei*, p. 382, Japan; PILSBRY, P. Ac. Philad. 1900: n. spp.
- Charax*, Benson nec Risso, renamed *Dicharax*, q.v.
- Chondropoma martensianum*, Mexico; PILSBRY, Nautilus xiii, p. 140: n. sp.
- Celopoma*, A. Ad. nec Agassiz, renamed *Spiropoma*, q.v.
- Cyclophorus songmaensis*, Morlet, is, from the type, a synonym of *C. dodrans*, Mabille; DAUTZENBERG, J. Conchyl. xlviii, p. 70.
- Cyclophorus* [appears an *Aperostoma*] *underwoodi*, Costa Rica; DA COSTA, P. Malac. Soc. London iv, p. 87, fig.: *C. egregius*, p. 4, *pluciferus*, p. 5, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900: n. spp.
- Cyclostoma elegans*, radula; TEMPÈRE (523).
- Cyclostoma ischuraulaxum*, Italy, Sicily, and Algeria; FAGOT, Bull. Soc. malac. France vi, p. 167 [1889]: n. sp.
- Cyclotus* (?) *micron*, Japan; PILSBRY, Nautilus xiv, p. 12: n. sp.
- Diadema*, Pease, should be replaced by *Garrettia*, Pease; MOELLENDORFF, J. Malac. vii, p. 118.
- Dicharax*, n. n. for *Charax*, Bens. nec Risso; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 186.
- Diplommatina pusilla*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 382.
- Diplommatina belonis*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 137: *D. oreadis*, Queensland; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 512, fig.: *D. uzenensis*, Japan; PILSBRY & GULICK, Nautilus xiv, p. 88: n. spp.
- Gastroptychia*, n. n. for *Paxillus*, Adams nec Michean; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 186.
- Lagochilus costulatum*, Annam; MOELLENDORFF, t. c. p. 134: n. sp.
- Leptopoma* (*Trocholeptopoma*) *annamiticum*, Annam; MOELLENDORFF, t. c. p. 134: *L. (Trocholeptopoma) mitchellæ*, Borneo; SMITH, P. Malac. Soc. London iv, p. 42, fig.: n. spp.
- Metalycæus*, n. sect. of *Alycæus* for *A. melanopoma*, *hirasei*, n. spp.; PILSBRY, P. Ac. Philad. 1900, p. 382.
- Omphalotropis brenchleyi*, p. 145, *suteri*, p. 146, Norfolk I.; SYKES, P. Malac. Soc. London iv, figg.: n. spp.
- Paratropis*, Bttg nec Simon, renamed *Spiratropis*, q.v.
- Paxillus*, Adams nec Michean, renamed *Gastroptychia*, q.v.
- Pomatias*, Studer, note on; MARTENS, Nachrbl. Deutsch. malak. Ges. 1891, p. 143.
- Pterocyclus marioni*, Ancey, equals *P. housei*, Haines; DAUTZENBERG, J. Conchyl. xlviii, p. 70.
- Pupina bilobata*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 7: n. sp.
- Pupinella fruhstorferi*, West Japan; MOELLENDORFF, t. c. p. 110: n. sp.
- Quadrasella ammonitella*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 120: n. sp.



- Siphonocyclus*, n. sect. of *Procyclus* for *P. borealis*, Mlldff., and others; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 136.  
*Spiraculum assamense*, Assam; FULTON, Nautilus xiv, p. 87: n. sp.  
*Spiratropis*, n. n. for *Paratropis*, Bttg. nec Simon; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 186.  
*Spiropoma*, n. n. for *Cælopoma*, A. Ad. nec Agassiz; KOBELT & MOELLENDORFF, t. c. p. 186.

## TRUNCATELLIDÆ.

- Blanfordia*, note on; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 153.

## CAPULIDÆ, NATICIDÆ, and XENOPHORIDÆ.

- Amauropsis moerchi*, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 94.  
*Capulus californicus*, California; DALL, Nautilus xiii, p. 100: n. sp.  
*Cheilea*, Modeer, should be used for group of *Patella equestris*, L.; DALL, op. cit. xiv, p. 45.  
*Natica subcostata*, T. Woods, figd.; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 132: *N. tenisoni*, n. n. for *N. nana*, Woods nec Möller; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 94.  
*Natica shorehami*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 131, fig.: *N. labrotincta*, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 127, fig.: *N. jousseaumei*, New Caledonia; EUTHYME, Bull. Soc. malac. France ii, p. 239 [1885]: n. spp.  
*Vanikoro gracilis*, Braz., is a *Couthouya*, with fig.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 506.  
*Xenophora*, figd.; CHUN (87), p. 366.

## PTENOGLOSSA.

## SCALIDÆ.

- Crosseia labiata*, T. Woods, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 500.  
*Scala electa*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 536, fig.: n. sp.  
*Scalaria (Acrilla) minutula*, Tasmania, S. Australia, and Victoria; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 95: n. sp.

## GYMNOGLOSSA.

## EULIMIDÆ and PYRAMIDELLIDÆ.

- Acicularia*, n. sect. for *Eulima beryllina*, Monts., etc.; MONTEROSATO (584), p. 102.  
*Auristomia*, n. sect. for *Odostomia erjaveciana*, Brus., etc.; MONTEROSATO (584), p. 95.  
*Brachystomia*, n. sect. for *Odostomia rissoides*, Hanley, etc.; MONTEROSATO (584), p. 94.  
*Elusa subulata*, A. Ad., figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 504.  
*Eulima (Vitreolina) dautzenbergi*, Oran; PALLARY, J. Conchyl. xlviii, p. 339, fig.: *E. hypsela, amblytera*, p. 526, *engonia, compsa*, p. 527, *atypha*, p. 528, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x,

- figg.: *E. inflata*, p. 95, *mayii*, Tate, Tasmania, *tryoni*, p. 96, S. Australia, Victoria, and Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Eulimidae*, monograph completed; CLESSIN in MARTINI & CHEMNITZ (311).
- Jordanella*, n. gen. for *Odostomia nivosa*, Mont.; CHASTER, P. Irish Ac. v, p. 20 [1899].
- Leiostraca*, Adams, renamed *Subularia*, q.v.
- Leucotina helvola*, Queensland; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 510, fig. : n. sp.
- Megastomia*, n. sect. for *Odostomia conspicua*, Alder; MONTEROSATO (584), p. 94.
- Menon*, n. gen. for *M. anceps*, n. sp., N. S. Wales; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 90, fig. : Genus is a synonym of *Chileutomia*; HEDLEY, t. c. p. 505.
- Mucronalia philippinarum*, *cylindrica*, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 127, figg. : n. spp.
- Niso*, monograph by CLESSIN in MARTINI & CHEMNITZ (311).
- Niso balteata*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 6, fig. : n. sp.
- Odontostomia deplexa*, Tasmania, S. Australia, and Victoria, *varians*, p. 97, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Odostomia petterdi*, n. n. for *Obeliscus tasmanica*, Petterd, preocc.; GATLIFF, Victorian Natural. xvii, p. 54.
- Odostomia metcalfei*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 136, fig. : *O. verticalis*, Bantry Bay; MARSHALL, J. Conch. ix, p. 333: *O. jonesii*, p. 531, *lubrica*, p. 532, (*Cyclodostomia*) *didyma*, (*Eualea*) *somersi*, p. 533, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, figg. : *O. kraussii*, p. 155, *cionelloides*, *curta*, Japan, p. 116, *manilensis*, Manila, p. 118, *hilgendorfi*, Japan, *muelleri*, Brazil, p. 119, *glabra*, Japan, *panamensis*, Panama, p. 120, *sitkaensis*, Sitka, p. 121, *schützei*, p. 123, *flavescens*, Makao, p. 125; CLESSIN in MARTINI & CHEMNITZ (311), figg. : n. spp.
- Parthenia adamsii*, p. 187, n. n. for *P. fenestrata*, A. Adams nec Forbes, *monterosatii*, p. 188, n. n. for *P. brevicula*, Monterosato nec Jeffreys; CLESSIN in MARTINI & CHEMNITZ (311).
- P. benguelensis*, p. 192, Benguela, Sumatra; CLESSIN in MARTINI & CHEMNITZ (311), fig. : n. sp.
- Pseudorissolina*, n. gen. for *Stylifer tasmanica*, Woods; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 98.
- Pyramidellidae*, monograph commenced; CLESSIN in MARTINI & CHEMNITZ (311).
- Pyrgisculus*, n. sect. for *Odostomia scalaris*, Phil.; MONTEROSATO (584), p. 88.
- Pyrgolidium*, n. sect. for *Odostomia roseum*, Monts.; MONTEROSATO (584), p. 89.
- Pyrgostelis*, n. sect. for *Odostomia rufa*, Phil., etc.; MONTEROSATO (584), p. 89.
- Pyrgostylus*, n. sect. for *Turbonilla striatula* (L.); MONTEROSATO (584), p. 90.
- Scalenostoma striatum*, Queensland and Torres Straits; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 507, fig. : n. sp.
- Spiralina*, n. gen. for *Odostomia spiralis*, Mont.; CHASTER, P. Irish Ac. v, p. 20 [1899].
- Stylifer lodderei*, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 92: *S. petterdi*, n. n. for *S. robusta*, Petterd nec Pease; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 96.
- Stylifer immaculata*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 137, fig. : n. sp.

- Subularia*, n. n. for *Leiostraca*, Adams, nec *Leiostracus*, Albers; MONTEROSATO (584), p. 103.
- Syrnola angasii*, n. n. for *S. gracillima*, Smith nec A. Adams; CLESSIN in MARTINI & CHEMNITZ (311), p. 67: *S. petterdi*, n. n. for *Obeliscus tasmanicus*, Woods, nec *S. tasmanica*, Petterd; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 97.
- Syrnola harrisoni*, p. 96, *punctospira*, p. 97, Tasmania; TATE & MAY, t. c. : n. spp.
- Tiberia*, Jeffreys, renamed *Tiberiola*, q.v.
- Tiberiola*, n. n. for *Tiberia*, Jeffreys nec Monterosato; COSSMANN, Rev. paleozool. iv, p. 44.
- Trabecula*, n. sect. for *Odostomia jeffreysiana*, Seguenza; MONTEROSATO (584), p. 86.
- Tragula*, n. sect. for *Odostomia fenestrata*, Forbes; MONTEROSATO (584), p. 86.
- Turbonilla admiranda*, n. n. for *Elusa bifasciata*, Woods, preocc.; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 98: *T. kraussi*, n. n. for *T. lactea*, Krauss nec Linn.; CLESSIN in MARTINI & CHEMNITZ (311), p. 135.
- Turbonilla (Ondina) micra*, p. 134, *brevis*, p. 135, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, figg.: *T. tincta*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 5, fig.: *T. valida*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 528, fig.: *T. maltzani*, p. 160, Goree, *puncturata*, Rio Janeiro, *fintschi*, p. 163, Raluit I., *gracilis*, p. 164, Cuba, *rentsii*, W. Indies, *alta*, p. 165, Japan, *subulata*, Amboina, *martensii*, p. 167, Timor, *striata*, China, *iheringi*, p. 168, S. Brazil, *portoricensis*, Brazil, *makaoensis*, p. 169, China, *chinensis*, p. 170, Makao, *pulchra*, p. 171, Jamaica, *iheringi*, p. 174, S. Brazil; CLESSIN in MARTINI & CHEMNITZ (311), figg. : n. spp.
- Vitreolina*, n. sect. for *Eulima incurva*, Ren., &c.; MONTEROSATO (584), p. 100.

## SCUTIBRANCHIATA.

## RHIPHIDOGLOSSA.

## DESPENIDÆ AND HELICINIDÆ.

- Caloplisma*, n. sect. of *Helicina* for *H. rostrata* and others; CROSSE & FISCHER, Miss. Sci. Mexique, Moll. ii, p. 405 [1893].
- Chersodespæna*, n. subgen. of *Despæna*, type *D. cinnamomea*, n. sp.; SYKES, P. Malac. Soc. London iv, p. 136.
- Despæna* (*Chersodespæna*, n. subgen.) *cinnamomea*, Ecuador; SYKES, t. c. p. 136, fig.: n. sp.
- Georissa japonica*, Japan; PILSBRY, P. Ac. Philad. 1900, p. 384: *G. rufula*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 121: *G. chrysacme*, p. 137, *decora*, *exarata*, p. 138, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900 : n. spp.
- Helicina sundana*, n. n. for *H. exserta*, Martens nec *exerta*, Pfr.; ANCEY, Nautilus xiv, p. 83.
- Helicina iguapensis*, p. 393, *inæquistriata*, p. 394, Brazil; PILSBRY, P. Ac. Philad. 1900 : n. spp.
- Linidiella*, n. gen. for *Proserpina swifti*, Bldn.; JOUSSEAUME, Mem. Soc. zool. France i, p. 256 [1889; apparently identical with *Chersodespæna*, q.v.].
- Oxyrhombus*, n. sect. of *Helicina* for *H. ghiesbreghti* and others; CROSSE & FISCHER, Miss. Sci. Mexique, Moll. ii, p. 399 [1893].

*Proserpinacea*, notes on ; SYKES, P. Malac. Soc. London iv, pp. 137 & 138.  
*Pyrgodomus*, n. sect. of *Helicina* for *H. chryseis* ; CROSSE & FISCHER, Miss.  
 Sci. Mexique, Moll. ii, p. 440 [1893].

# NERITIDÆ, TROCHIDÆ, TURBINIDÆ, AND CYCLOSTREMATIDÆ.

- Calliostoma veliei*, Florida ; PILSBRY, Nautilus xiii, p. 128 : n. sp.  
*Caragolus*, n. n. for *Trochocochlea*, auct. nec Klein ; MONTEROSATO (584),  
 p. 43.  
*Chlorostoma hidalgoi, orbignyanum*, Patagonia ; PILSBRY, Nautilus xiii,  
 p. 111 : n. spp.  
*Cyclostrema angeli*, T. Woods, figd. ; HEDLEY, P. Linn. Soc. N. S. Wales  
 xxv, p. 503.  
*Cyclostrema porcellana*, Tasmania ; TATE & MAY, Tr. R. Soc. S. Austral.  
 xxiv, p. 101 : *C. cristata, dispar*, Cebu ; SOWERBY, P. Malac. Soc.  
 London iv, p. 128, figg. : n. spp.  
*Gibbula (Enida) perspectiva*, Pondoland ; SOWERBY, t. c. p. 6, fig. : n. sp.  
*Leptothyra viridula*, Cebu ; SOWERBY, t. c. p. 128, fig. : n. sp.  
*Liotia hedleyi*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii,  
 p. 105, fig. : *L. rostrata, philtata*, Queensland ; HEDLEY, P. Linn. Soc.  
 N. S. Wales xxv, p. 502, figg. : n. spp.  
*Lodderia minima*, figd. ; HEDLEY, t. c. p. 94.  
*Nerita melanotragus*, Smith, note on ; HEDLEY, t. c. p. 500.  
 †*Palæocollonia*, n. gen. for *P. levigata* (Müstr.), Trias ; KITTL, Ann.  
 Hofmus. Wien xiv, p. 22.  
 †*Paratrochus*, n. gen. for *Tectus margine-nodosus*, J. Böhm, Trias ; KITTL,  
 t. c. p. 24.  
*Petropoma*, Gabb, is a synonym of *Leptothyra* ; H. A. P., Nautilus vii,  
 p. 84 [1893].  
*Porcupinia*, n. n. for *Tharsis*, Jeffreys nec Gieb. ; COSSMANN, Rev. paleozool.  
 iv, p. 43.  
*Synaptocochlea preta*, radula ; VERRILL & BUSH, Tr. Connect. Ac. x,  
 p. 525.  
*Teinostoma orbitum*, Torres Straits ; HEDLEY, P. Linn. Soc. N. S. Wales  
 xxv, p. 96, fig. : n. sp.  
*Thalotia dubia*, T. Woods, is a synonym of *T. conica*, Gray ; GATLIFF,  
 Victorian Natural. xvii, p. 113.  
*Tharsis*, Jeffreys, renamed *Porcupinia*, q.v.  
*Trochus*, note on anatomy ; HALLER, Zool. Anz. xxiii, p. 189 : *T. zizy-*  
*phinus*, radula ; TEMPÈRE (523).  
*Turbo tricarínulatus*, Cape of Good Hope ; EUTHYME, Bull. Soc. malac.  
 France ii, p. 252 [1885] : n. sp.  
*Vitrinella simplex*, Cebu ; SOWERBY, P. Malac. Soc. London iv, p. 128, fig. :  
 n. sp.

# HALIOTIDÆ, PLEUROTOMARIIDÆ, and FISSURELLIDÆ.

- †*Codinella*, n. gen. for *Trochus generelii*, Stoppani, Trias ; KITTL, Ann.  
 Hofmus. Wien xiv, p. 15.  
*Fissurella (Lucapinella) henseli*, South Brazil ; MARTENS, Nachrbl. Deutsch.  
 malak. Ges. 1900, p. 187.  
*Fissuridea linteæ*, animal ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 95.  
*Haliotis*, radula ; TEMPÈRE (523) : *H. fulgens*, variety ; STEARNS, P. U. S.  
 Mus. xxii, p. 140.  
*Lucapinella versluysi*, Cape Verd Is. ; DAUTZENBERG, Mem. Soc. zool.  
 France xiii, p. 217, fig. : n. sp.



- Phenacolepas*, catalogue of genus ; PILSBRY, *Nautilus* xiv, pp. 61-63.  
*Pleurotomaria beyrichii*, living specimen ; SCHEDEL, *Nachrbl. Deutsch. malak. Ges.* 1900, p. 18: *P. salmiana*, note on with figure ; F[ISCHER], *J. Conchyl.* xlviii, pp. 102 & 103.  
*Puncturella kesteveni*, N. S. Wales ; HEDLEY, *P. Linn. Soc. N. S. Wales* xxv, p. 499, fig.: n. sp.  
*Zeidora tasmanica*, figd. ; HEDLEY, t. c. p. 93: *Z. lodderæ*, n. n. for *Z. tasmanica*, Hedley nec Beddome ; TATE & MAY, *Tr. R. Soc. S. Austral.* xxiv, p. 101.

### DOCOGLOSSA.

Hermaphroditism ; WILCOX, *Science* xii, p. 230.

### ACMÆIDÆ and PATELLIDÆ.

- Acmaea testudinalis*, anatomy ; WILCOX, *Science* xi, p. 171.  
 †*Acrореia*, n. gen. for *Nacella baylei*, COSSM., *Tertiary* ; COSSMANN (579), p. 131.  
*Bathysciadium conicum*, n. gen. and sp., Azores, forms also n. fam. *Bathysciadidae* ; DAUTZENBERG & FISCHER, *Bull. Soc. zool. France* xxiv, p. 207, fig.: Note on anatomy ; PELSENEER, t. c. p. 209: Note on ; DALL, *Science* xi, p. 914: Is a synonym of *Lepeta costulata*, Loc., but the genus is new ; DAUTZENBERG & FISCHER, *J. Conchyl.* xlviii, p. 460.  
*Helcion pellucidus* and *H. corneus*, habits and differences ; MARTEL (298).  
*Nacella parva* var. *tasmanica* is a species ; TATE & MAY, *Tr. R. Soc. S. Austral.* xxiv, p. 102.  
*Patella*, radula ; TEMPÈRE (523).  
 †*Randomia*, n. gen., type *R. aurora*, n. sp., Etcheminian ; MATTHEW, *Bull. Soc. N. Brunswick* iv, p. 190.

### III. SCAPHOPODA.

- Cadulus lævis*, Braz., figd. ; HEDLEY, *P. Linn. Soc. N. S. Wales* xxv, p. 499.  
*Cadulus (Gadilia) spretus*, Tasmania ; TATE & MAY, *Tr. R. Soc. S. Austral.* xxiv, p. 102: n. sp.  
*Dentalium dollfusi*, COSSMANN [1899], is a synonym of *D. inæquicostatum*, Dautz. ; COSSMANN, *Rev. paleozool.* iv, p. 186.  
*Pseudantalais*, n. gen. for *Dentalium rubescens*, Desh. ; MONTEROSATO (584), p. 32.

### IV. PELECYPODA.

On the 'eyes' in some Pelecypoda ; HESSE (223).  
 Many critical notes with new subgenera and sections ; DALL (121).

### SEPTIBRANCHIATA.

[None.]

## EULAMELLIBRANCHIATA.

## ANATINACEA.

*Alicia*, Angas, renamed *Thraciopsis*, q.v.

†*Endomargarus*, n. gen., type *Lyonsia heberti*, Desh.; COSSMANN (580), p. 58.

*Thraciopsis*, n. n. for *Alicia*, Angas nec Johnson; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 103.

## PHOLADACEA.

[None.]

## MYACEA and CARDIACEA.

†*Acrosterigma*, n. sect. of *Trachycardium*, type *C. dalli*, Heilprin; DALL, Tr. Wagner Inst. iii, p. 1073. [Also in P. U. S. Mus. xxiii, p. 383.]

*Cardiidae*, synopsis of family; DALL (123).

†*Cuneocorbula*, n. sect. of *Corbula*, first species *C. biangulata*, Desh.; COSSMANN (580), p. 49.

*Dinocardium*, n. sect. of *Cerastoderma*, type *Cardium magnum*, Born; DALL, Tr. Wagner Inst. iii, p. 1074. [Also in P. U. S. Mus. xxiii, p. 384.]

†*Divaricardium*, n. gen. for *Cardium discrepans*, Bast.; DOLLFUS & DAUTZENBERG, Feuille Natural. 1886, p. 95 [1886].

†*Fabagella*, n. gen., type *Corbula faba*, Desh.; COSSMANN (580), p. 53.

*Hemicardium tegulatum*, hab. unknown; DAUTZENBERG, J. Conchyl. xlviii, p. 5, fig.: n. sp.

†*Loxocardium*, n. sect. of *Cardium*, first species *C. formosum*, Desh.; COSSMANN (580), p. 172.

†*Neæroporomya*, n. gen. for *Corbula argentea*, Lam.; COSSMANN (580), p. 58.

*Parvicardium*, n. sect. of *Cardium* for *C. parvum*, Phil., etc.; MONTEROSATO (584), p. 19.

†*Plagiocardium*, n. sect. of *Cardium*, first species *C. granulosum*, Lam.; COSSMANN (580), p. 168.

*Trigoniocardia*, n. sect. of *Fragum*, type *Cardium graniferum*, Sby.; DALL, Tr. Wagner Inst. iii, p. 1075. [Also in P. U. S. Mus. xxiii, p. 384.]

## VENERACEA and TELLINACEA.

*Aeretica*, n. sect. of *Strigilla*, type *S. senegalensis*, Hanley; DALL, Tr. Wagner Inst. iii, p. 1038.

†*Arcopagiopsis*, n. sect. of *Tellina*, first species *T. pustula*, Desh.; COSSMANN (580), p. 81.

†*Asaphinella*, n. gen., type *Capsa minima*, Desh.; COSSMANN (580), p. 97.

†*Atopodonta*, n. gen., first species *Venus conformis*, Desh.; COSSMANN (580), p. 110.

†*Callistotapes*, n. subgen. of *Tapes*, type *Venus vetula*, Bast.; SACCO (452), p. 52.

†*Chionella*, n. sect. of *Cytherea*, first species *C. ovalina*, Desh.; COSSMANN (580), p. 117.

- Circenita*, n. gen. of *Venerida*, type *Venus arabica*, Chem.; JOUSSEAUME, Mem. Soc. zool. France i, p. 208 [1888].
- +*Cyclotellina*, n. sect. of *Tellina*, type *T. lunulata*, Lam.; COSSMANN (580), p. 79.
- Cydippina*, n. sect. of *Psammacoma* (q.v.), type *Macoma brevifrons*, Say.; DALL, P. U. S. Mus. xxiii, p. 292.
- Cymatoica*, n. subgen. of *Macoma* for two n. spp.; DALL, op. cit. xii, p. 272 [1890].
- +*Dollfusia*, n. gen. for *D. crassa*, n. sp.; COSSMANN (580), p. 128.
- +*Elliptotellina*, n. sect. of *Tellina*, type *T. tellinella*, Lamk.; COSSMANN (580), p. 70.
- Eutapes*, apparently n. sect. of *Venus* for *V. rhomboides*, Penn.; CHIAMENTI, Riv. Ital. Sci. Nat. xx, p. 11.
- +*Garum*, n. sect. of *Psammobia*, type *P. dutemplei*, Desh.; DALL, Tr. Wagner Inst. iii, p. 975.
- Gastranella tumida*, occurrence of; WINKLEY, Nautilus xiv, p. 93: Is nepionic stage of *Petricola*; DALL, Tr. Wagner Inst. iii, p. 1057.
- Grammatodonax*, n. sect. of *Donax* for *D. madagascariensis*, Lam.; DALL, t. c. p. 963.
- Grammatomya*, n. sect. of *Psammobia*, type *P. squamosa*, Lamk.; DALL, P. Ac. Philad. 1898, p. 57. [Dated 1897, but really 1898.]
- Labiosa meridionalis*, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 497.
- Lutricularia*, n. sect. [? of *Scrobicularia*] for *Erycina ovata*, Phil., etc.; MONTEROSATO (584), p. 28.
- +*Macaliopsis*, n. sect. of *Tellina*, first species *T. barrandei*, Desh.; COSSMANN (580), p. 75.
- Macoma phenax*, Virginia and Florida, (*Psammacoma*) *extenuata*, Florida, p. 314, (*P.*) *tagelliformis*, Texas, p. 315, *krausei*, Bering Strait, p. 322, *sitkana*, *alaskana*, Alaska, p. 323, (*indentata* var. ?) *tenuirostris*, California, *panamensis*, Panama Bay, p. 324; DALL, P. U. S. Mus. xxiii, figg. : n. spp.
- Merisca*, n. sect. of *Arcopagia* for *Tellina æquistriata*, Say., and others; DALL, Tr. Wagner Inst. iii, p. 1012. [Also in P. U. S. Mus. xxiii, p. 290.]
- +*Myrsopsis*, n. subgen. of *Tapes*, type *Venerupis pernarum*, Bonelli; SACCO (452), p. 57.
- Nuttallia*, n. sect. of *Sanguinolaria*, type *S. nuttalli*, Conrad; DALL, Tr. Wagner Inst. iii, p. 979.
- Oudardia*, n. sect. of *Tellina* for *T. oudardi*, Payr.; MONTEROSATO (584), p. 22.
- +*Parvivenus*, n. subgen. of *Venus*, type *Venus marginatus*, Hoernes; SACCO (452), p. 45.
- Peronæa*, Morch, renamed *Peronidia*, q.v.
- Peronidia*, n. n. for *Peronæa*, Morch, nec *Peronea*, Curtis; DALL, Tr. Wagner Inst. iii, p. 1014. [Also in P. U. S. Mus. xxiii, p. 291.]
- Petricola denticulata*, note on species, of which *Psephis tellimyialis*, Cptr., is a synonym; DALL, Nautilus xiii, p. 121.
- Phyllodina*, n. sect. of *Arcopagia*, type *Tellina squamifera*, Desh.; DALL, Tr. Wagner Inst. iii, p. 1012. [Also in P. U. S. Mus. xxiii, p. 290.]
- Platydonax*, n. sect. of *Donax* for *D. finchii*, Sby.; DALL, t. c. p. 963.
- Politiitapes*, apparently n. sect. of *Venus* for *Venus aurea*, Gmel.; CHIAMENTI, Riv. Ital. Sci. Nat. xx, p. 11.
- Psammacoma*, n. subgen. of *Macoma*, type *Tellina candida*, Lam.; DALL, Tr. Wagner Inst. iii, p. 1045. [Also in P. U. S. Mus. xxiii, p. 292.]
- +*Psammodonax*, n. gen., type *Psammobia caillati*, Desh.; COSSMANN (580), p. 96.
- +*Psammoica*, n. sect. of *Psammobia*, type *P. appendiculata*, Desh.; DALL, Tr. Wagner Inst. iii, p. 975.

- +*Psammotæna*, n. sect. of *Psammobia*, type *P. effusa*, Lam.; DALL, t. c. p. 976.
- Psammotreta*, n. sect. of *Psammacoma* (n. subgen., q.v.), type *Macoma aurora*, Hanley; DALL, t. c. p. 1045. [Also in P. U. S. Mus. xxiii, p. 292.]
- Rombergia*, n. sect. of *Strigilla*, type *S. rombergi*, Morch; DALL, t. c. p. 1038.
- Ruditapes*, apparently n. sect. of *Venus* for *V. decussata*, L.; CHIAMENTI, Riv. Ital. Sci. Nat. xx, p. 13.
- Tapes pullastra* is distinct from *T. geographicus*; WOODWARD, J. Conch. ix, p. 365.
- Scissula*, n. sect. of *Angulus*, type *Tellina decora*, Say; DALL, Tr. Wagner Inst. iii, p. 1014. [Also in P. U. S. Mus. xxiii, p. 291.]
- Scrobiculina*, n. sect. of *Arcopagia*, type *Scrobicularia viridotincta*, Cptr.; DALL, t. c. p. 1013. [Also in P. U. S. Mus. xxiii, p. 290.]
- Semelina*, n. sect. of *Semele*, type *S. nuculoides*, Conrad; DALL, t. c. p. 986.
- +*Taurotapes*, n. subgen. of *Tapes*, type *Venus craverii*, Micht.; SACCO (452) p. 58.
- Tellina* (*Tellinella*) *versluysi*, Santa Marta; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 259, fig.: *T. (Eurytellina?) georgiana*, Gulf of Mexico and St Thomas, p. 310, (*Liotellina*) *iheringi*, Rio la Plata, (*Elliptotellina*) *americana*, North Carolina, p. 311, (*Angulus*) *promera*, Bermuda, (*A.*) *flagellum*, Brazil, p. 312, (*A.*) *colorata*, Guadeloupe, (*A.*) *texana*, Texas and Florida, p. 313, (*Merisca*) *reclusa*, Lower California, p. 315, (*Elliptotellina*) *pacifica*, Panama Bay, (*Phyllodina*) *pristiphora*, Lower California, p. 316, (*Eurytellina*) *leucogonia*, (*Morrellia*) *meropsis*, (*M.*) *amianta*, p. 317, (*M.*) *paziana*, California, (*Angulus*) *macneilii*, Mexico, p. 318, (*A.*) *suffusa*, (*A.*) *cerrosiana*, Lower California, (*A.*) *panamensis*, Panama Bay, p. 319, (*A.*) *recurva*, p. 320, (*Peronidia*) *santarose*, p. 321, California; DALL, P. U. S. Mus. xxiii, figg. : n. spp.
- Tellinidæ*, synopsis of family with several species figd.; DALL (122): On cruciform muscle; IHERING (240): *T. carpenteri*, n. n. for *Angulus variegatus*, Cptr., nec *Tellina variegata*, Gmel., *buttoni*, n. n. for *Angulus modestus*, auct. nec Sby.; DALL, P. U. S. Mus. xxiii, p. 320.
- +*Textivenus*, n. sect. of *Venus*, first species *V. texta*, Lam.; COSSMANN (580), p. 109.
- +*Tivelina*, n. sect. of *Cytherea*, first species *C. tellinaria*, Dufour; COSSMANN (580), p. 119.
- +*Venerella*, n. sect. of *Venus*, first species *V. hermonvillensis*, Desh.; COSSMANN (580), p. 106.
- +*Veneritapes*, n. gen. for *Psammobia bervillei*, Desh.; COSSMANN (580), p. 104.

## SUBMYTILACEA.

- Actinonaias*, n. sect. of *Unio* for *U. sapotalensis*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- Acuticosta*, n. subgen. of *Parreysia*, type *Unio chinensis*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 850.
- Amphinaias*, n. sect. of *Unio* for *U. couchianus*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- Amygdalonalaias*, n. sect. of *Unio* for *U. cognatus*, Lea; CROSSE & FISCHER, t. c. p. 557 [1894].
- +*Angusticardo*, n. sect. of *Sportella*, first species *S. rotundata*, Desh.; COSSMANN (581), p. 13.
- Anodonta cygnea*, varieties with new names; BUCHNER, Jahresh. Ver. Wurtemb. lvi, pp. 60-223: *A. cygnea*, monstrosities; BLOOMER, J. Malac. vii, pp. 136 & 177.



- Anodonta expressa*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 12: *A. richardsoni*, p. 529, N.W. Mexico, *deperax*, p. 538, W. Guatemala; MARTENS, Biol. Centr.-Amer. figg.: *A. bythia*, p. 211, *schroederi*, p. 212, *potimia*, p. 214, *richardi*, p. 215, *perlora*, p. 217, *tricassinæformis*, p. 218, *rhynconella*, p. 219, *journeopsis*, p. 222, Germany; SCHRÖDER (585): *A. josei*, p. 278, *enhydra*, p. 279, *tuberculata*, p. 281, *tumidiformis*, p. 283, *sadoicus*, p. 284, *macropygus*, p. 286, *eupygus*, p. 287, *hyperephanus*, p. 289, *nevesi*, p. 290, *simoesi*, p. 292, Portugal; CASTRO, Bull. Soc. malac. France ii [1885]: *A. epidedacra*, p. 335, *eupelina*, p. 336, *calara*, p. 337, *eucaca*, p. 338, *foeda*, p. 340, *immunda*, p. 341, *misara*, p. 343, *rayopsis*, p. 344, *duregica*, p. 346, *tigurica*, p. 348, *ruvidella*, p. 349, *hypeschra*, p. 351, Lake of Zurich; SERVAIN, t. c. [1885]: n. spp.
- †*Anomalokellia*, n. sect. of *Kellia*, type *K. catalaunensis*, Cossm.; COSSMANN (581), p. 71.
- Aplodon*, Spix, renamed *Spixconcha*, q. v.
- Arcidens*, n. gen., type *Alasmodonta confragosa*, Say; SIMPSON, P. U. S. Mus. xxii, p. 661.
- Arcidopsis*, n. gen., type *Unio footei*, Theobald; SIMPSON, t. c. p. 861.
- Arotonaias*, n. subgen. of *Unio*, for *U. cyrenoides*, Phil., etc.; MARTENS, Biol. Centr.-Amer. pp. 480, 497.
- Astarte sulcata*, shells with crenulated margins belong to females, those with smooth edges to males; OSTROOUMOFF (368).
- Aurora*, n. subgen. of *Parreysia*, type *Unio auroreus*, Heude; SIMPSON, P. U. S. Mus. xxii, p. 849.
- Barynaias*, n. sect. of *Unio* for *U. pigerrimus*, C. & F.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
- †*Bernayia*, n. gen., first species *B. subarata*, n. sp., Eocene; COSSMANN (581), p. 16.
- Bineurus*, n. sect. of *Pseudodon*, type *Monocondylæa mouhoti*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 839.
- Bullella*, n. subgen. of *Alasmidonta*, type *Margaritana arcula*, Lea; SIMPSON, t. c. p. 672.
- Bulloideus*, n. sect. of *Diplodon*, type *Unio bulloides*, Lea; SIMPSON, t. c. p. 887.
- Cænonaias*, n. sect. of *Unio* for *U. æruginosus*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- Cafferia*, n. sect. of *Nodularia*, type *Unio caffer*, Krauss; STIMPSON, P. U. S. Mus. xxii, p. 824.
- Callocardia* is equivalent to *Caryatis*; SMITH, P. Malac. Soc. London iv, p. 81.
- Callonaiia*, n. gen., type *Castalia duprei*, Recluz; SIMPSON, P. U. S. Mus. xxii, p. 867.
- Carditella delta*, p. 102, *pectinata*, p. 103, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv: n. spp.
- Castaliella*, n. gen., type *Castalia sulcata*, Krauss; SIMPSON, P. U. S. Mus. xxii, p. 866.
- Caudiculatus*, n. subgen. of *Hyriopsis*, type *Unio caudiculatus*, Martens; SIMPSON, t. c. p. 581.
- Chamberlainia*, n. gen., type *Unio hainesianus*, Lea; SIMPSON, t. c. p. 582.
- Corbicula obrutschewi, methoria*, Tschili-Li; STURANY, Denk. Ak. Wien lxx, p. 39, fig.: *C. gustaviana*, p. 17, *tobæ*, p. 18, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900: n. spp.
- Corunculina*, n. sect. of *Lampsilis* for *Unio parvus*, Barnes, and others; SIMPSON in BAKER, Bull. Chicago Ac. iii, p. 109 [1898]: should be *Carunculina*; SIMPSON, P. U. S. Mus. xxii, p. 563.
- Crassitesta*, n. subgen. of *Cristaria*, type *Cristaria radiata*, Simpson [n. n. for *Dipsas parvulus*, Heude, pars]; SIMPSON, t. c. p. 586.

- Ctenodesma*, n. gen., type *Unio borneensis*, Issel; SIMPSON, t. c. p. 852.
- Cuneopsis*, n. gen., type *Unio celtiformis*, Heude; SIMPSON, t. c. p. 804.
- Cyamium mactroides*, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 102: n. sp.
- Cyclomya*, n. subgen. of *Diplodon*, type *Unio funebris*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 885.
- Cylindrica*, n. sect. of *Nodularia*, type *N. cylindrica*, Simpson; SIMPSON, t. c. p. 807.
- Cyrena ingens*, New Hebrides; DAUTZENBERG, J. Conchyl. xlviii, p. 105, fig.: n. sp.
- Cyrtonaia*s, n. sect. of *Unio* for *U. berlandieri*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- +*Cytherocardia*, n. subgen. of *Isocardia*, type *I. cytheroides*, Mayer; SACCO (452), p. 5.
- Dalliella*, n. gen., type *Anodonta purpurea*, Val.; SIMPSON, P. U. S. Mus. xxii, p. 832.
- Delphinonaias*, n. sect. of *Unio* for *U. delphinulus*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 555 [1894].
- Diplodon wagnerianum*, n. n. for *Unio ellipticus*, Wagner nec Barnes, p. 877, *cuprinus*, n. n. for *fragilis*, Sby., preocc., *aureus*, n. n. for *auratus*, Kuster nec Phil., p. 883; SIMPSON, P. U. S. Mus. xxii.
- Diplodonta (Phlyctiderma) puncturella*, Jamaica; DALL, Tr. Wagner Inst. iii, p. 1183, fig.: n. sp.
- Discomya*, n. subgen. of *Quadrula*, type *Unio radulosus*, Drouet & Chaper; SIMPSON, P. U. S. Mus. xxii, p. 802.
- Disconaias*, n. sect. of *Unio* for *U. discus*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- +*Divarikellia*, n. sect. of *Kellia*, type *K. nitida*, Caillat; COSSMANN (581), p. 67.
- Dreissensia polymorpha* with pearl; BLADEN (48).
- Dromus*, n. gen., type *Unio dromus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 614.
- Eupera pittieri*, S.W. Costa Rica; MARTENS, Biol. Centr.-Amer. p. 553, fig.: n. sp.
- +*Fulcrella*, n. subgen. of *Anisodonta*, type *Poromya paradoxa*, Desh.; COSSMANN (580), pp. 149, 153.
- Fusconaia*, n. sect. of *Quadrula*, type *Unio trigonus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 784.
- Gibbosula*, n. gen., type *Mya crassa*, Wood; SIMPSON, t. c. p. 804.
- Glabaris philippianus*, n. n. for *Anodonta subsinuata*, Phil. nec Sby., p. 919, *umbonatus*, n. n. for *Anodon ciconia*, Sby., pars, p. 926; SIMPSON, t. c.
- Glabaris falsus*, Orinoco River; SIMPSON, t. c. p. 932: n. sp.
- +*Goossensia*, n. gen. for *G. plicatuloides*, n. sp., Tertiary; COSSMANN (579), p. 113.
- Grandidieria*, n. gen. of *Unionidae*, with several n. spp., Lake Tanganyika; BOURGUIGNAT, Bull. Soc. malac. France ii, p. 1 [1885].
- Graphonaias*, n. sect. of *Unio* for *U. medellinus*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
- Hyriana*, n. subgen. of *Hyria*, type *Unio ortonii*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 872.
- Hyriopsis bialatus*, n. n. for *Unio delphinus*, Gruner nec Spengler; SIMPSON, t. c. p. 579.
- Iheringella*, n. n. for *Plagiodon*, Lea nec Dumeril; PILSBRY, Nautilus vii, p. 30 [1893].
- Lævirostris*, n. subgen. of *Diplodon*, type *Unio stagnorum*, Dautz.; SIMPSON, P. U. S. Mus. xxii, p. 894.

- Lamellidens*, n. gen., type *Unio marginalis*, Lam.; SIMPSON, t. c. p. 854 :  
*L. canefrianus*, n. n. for *Unio protensus*, T. Canefri nec Lea; SIMPSON,  
 t. c. p. 857.
- Lamprotula*, n. subgen. of *Quadrula*, type *Chama plumbea*, Chemn.;  
 SIMPSON, t. c. p. 796.
- Lampsilis binominatus*, n. n. for *Unio lineatus*, Lea nec Val., p. 528,  
*lividus*, n. n. for *Unio testudineus*, Rve. nec Morel., p. 571; SIMPSON,  
 t. c.: *L. brittsi* is a var. of *L. breviculus*; SIMPSON, t. c. p. 533.
- Lampsilis simpsoni*, Arkansas; FERRISS, Nautilus xiv, p. 38: *L. fal-*  
*laciosus* (Smith), Mississippi, p. 74, *australis*, Alabama, *mearnsi*,  
 Texas, p. 75, *brittsi*, loc. not stated; SIMPSON, P. Ac. Philad. 1900,  
 figg. : n. spp.
- Lapidosus*, n. sect. of *Unio*, type *U. lapidosus*, Kob.; SIMPSON, P. U. S.  
 Mus. xxii, p. 700.
- Lasæa bermudensis* is a synonym of *L. rubra*; DALL, Tr. Wagner Inst. iii,  
 p. 1164.
- †*Laubriereia*, n. gen., type *Erycina emarginata*, Desh.; COSSMANN (580),  
 p. 72.
- Leguminaia locardi*, n. n. for *Pseudodon chantrei*, Locard, preocc.; SIMPSON,  
 P. U. S. Mus. xxii, p. 653.
- Lens*, n. sect. of *Physunio* (q.v.), type *Unio eximius*, Lea; SIMPSON, t. c.  
 p. 831.
- Leptonaias*, n. sect. of *Unio* for *U. ravistellus*, Morel.; CROSSE & FISCHER,  
 Miss. Sci. Mexique ii, p. 557 [1894].
- Lucina lux*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 518, fig. :  
 n. sp.
- †*Ludovicæ* (Desh. MS.), n. gen. for *L. squamula*, n. sp., Eocene; COSSMANN  
 (581), p. 45.
- Medionidus*, n. gen. for *Unio walkeri*; SIMPSON, P. Ac. Philad. 1900, p. 77 :  
 Also in P. U. S. Mus. xxii, p. 588 [with type *U. conradicus*, Lea].
- Mesonaias*, n. sect. of *Unio* for *U. explicatus*, Morel.; CROSSE & FISCHER,  
 Miss. Sci. Mexique ii, p. 556 [1894].
- Micronaias*, n. sect. of *Unio*, type *U. aratus*, Lea; SIMPSON, P. U. S. Mus.  
 xxii, p. 743.
- Mylitta inæqualis*, Dall, is a synonym of *M. gemmata*, Tate; HEDLEY,  
 P. Linn. Soc. N. S. Wales xxv, p. 497.
- Nasus*, n. sect. of *Pseudodon*, type *P. nankingensis*, Heude; SIMPSON,  
 P. U. S. Mus. xxii, p. 839.
- Neolepton*, n. gen. for *Lepton sulcatulum*, Jeff., etc.; MONTEROSATO (584),  
 p. 15.
- Nephronaias*, n. sect. of *Unio* for *U. plicatulus*, Charp.; CROSSE & FISCHER,  
 Miss. Sci. Mexique ii, p. 556 [1894].
- Nephronaias reticulatus*, Honduras; SIMPSON, P. Ac. Philad. 1900, p. 77,  
 fig. : n. sp.
- Nodularia lima*, n. n. for *Unio radula*, Bens. nec Say, p. 820, *jickeli*, n. n.  
 for *Unio teretiunculus*, Jickeli nec Phil., p. 826; SIMPSON, P. U. S.  
 Mus. xxii.
- Nodularia cylindracea*, China; SIMPSON, P. Ac. Philad. 1900, p. 84, fig. :  
 n. sp.
- Obovalis*, n. sect. of *Pseudodon*, type *P. loomisi*, Simpson; SIMPSON,  
 P. U. S. Mus. xxii, p. 840.
- Orobitella*, n. sect. of *Montacuta*, type *M. floridana*, Dall; DALL, Tr.  
 Wagner Inst. iii, pp. 1119, 1170.
- Pachyanodon*, n. subgen. of *Anodonta* for *A. luteola*, Lea, etc.; MARTENS,  
 Biol. Centr.-Amer. pp. 525, 537.
- Pachynaias*, n. sect. of *Unio* for *U. spheniopsis*, Morel.; CROSSE & FISCHER,  
 Miss. Sci. Mexique ii, p. 556 [1894].
- †*Parisiella*, n. gen. for *P. ambigua*, Eocene; COSSMANN (581), p. 103.

- Pegias*, n. gen., type *Margaritana fabula*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 660.
- Phyllonaias*, n. sect. of *Unio* for *U. paludosus*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 555 [1894].
- Physunio*, n. gen., type *Unio gravidus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 830.
- Pilea*, n. subgen. of *Truncilla*, type *Unio personatus*, Say; SIMPSON, t. c. p. 522.
- Pilsbryoconcha*, n. gen. for *Anodonta exilis*, Lea; SIMPSON, t. c. p. 587.
- Pisidium clessini*, Switzerland; SURBECK, Mt. Ges. Luzern iii, p. 482, fig.: *P. boliviense*, Bolivia; STURANY, Nachrbl. Deutsch. malak. Ges. 1900, p. 57, fig.: *P. imbecille*, Michigan, *peraltum*, Michigan, Illinois, Iowa, and Kentucky, p. 5; STERKI, Nautilus xiv : n. spp.
- Plagiodon*, Lea, renamed *Iheringella*, q.v.
- +*Planikellia*, n. sect. of *Kellia*, type *K. radiolata*, Lamk.; COSSMANN (581), p. 69.
- Plethobasus*, n. sect. of *Pleurobema*, type *Unio æsopus*, Green; SIMPSON, P. U. S. Mus. xxii, p. 764.
- Pletholophus*, n. subgen. of *Cristaria*, type *Symphynota discoidea*, Lea; SIMPSON, t. c. p. 585.
- Pleurobema avellana*, p. 81, *patsaligensis*, p. 82, Alabama; SIMPSON, P. Ac. Philad. 1900, figg. : n. spp.
- Pressodonta*, n. subgen. of *Alasmidonta*, type *Unio calceolus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 667.
- Pseudavicula*, n. gen., type *Unio johnstoni*, Smith; SIMPSON, t. c. p. 860.
- Pseudobaphia*, n. subgen. of *Parreysia*, type *Unio biesianus*, Heude; SIMPSON, t. c. p. 849.
- Pseudodon loomisi*, Japan; SIMPSON, P. Ac. Philad. 1900, p. 84, fig. : n. sp.
- Pseudomutela*, n. subgen. of *Mutela*, type *Mycetopus plicatus*, Sby.; SIMPSON, P. U. S. Mus. xxii, p. 905.
- Pseudön*, n. subgen. of *Obovaria*, type *Unio ellipsis*, Lea; SIMPSON, t. c. p. 601.
- Pseudospatha*, n. gen. for *Spatha tanganyicensis*, Smith; SIMPSON, t. c. p. 577.
- Psoronaias*, n. sect. of *Unio* for *U. psoricus*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- Ptychobranchus*, n. gen. for *Unio phaseolus*, Hildreth; SIMPSON, P. Ac. Philad. 1900, p. 79: Also in P. U. S. Mus. xxii, p. 612.
- Ptychobranchus clintonensis*, Arkansas; SIMPSON, P. Ac. Philad. 1900, p. 79, fig. : n. sp.
- Ptychoderma*, n. subgen. of *Plagiola*, type *Unio cyrenoides*, Phil.; SIMPSON, P. U. S. Mus. xxii, p. 606.
- Ptychorhynchus*, n. gen., type *Unio pfisteri*, Heude; SIMPSON, t. c. p. 850.
- Ptychorhynchus incertus*, n. n. for *Unio compressus*, Heude, preocc.; SIMPSON, t. c. p. 851.
- Quadrula kouangensis*, n. n. for *Unio moreletianus*, Heude, preocc., similaris, n. n. for *U. affinis*, Heude nec Lea, p. 799, *ovata*, n. n. for *U. vestitus*, Heude, pars, p. 801; SIMPSON, t. c.
- Quadrula guatemalensis*, Guatemala, *flexuosa*, Tennessee; SIMPSON, P. Ac. Philad. 1900, p. 83, figg. : n. spp.
- Radiatula*, apparently n. sect. of *Nodularia*, type *Unio crispisulcatus*, Bens.; SIMPSON, P. U. S. Mus. xxii, p. 820.
- Rectidens*, n. gen., type *Unio prolongatus*, Drouet; SIMPSON, t. c. p. 853.
- Rugifera*, n. subgen. of *Alasmidonta*, type *Alasmidonta marginata*, Say; SIMPSON, t. c. p. 670.
- Scolianodon*, n. subgen. of *Anodonta*, for *A. inæquivalvis*, Lea, etc.; MARTENS, Biol. Centr.-Amer. pp. 525, 534.



- Shistodesmus*, n. gen., type *Unio lampreyanus*, Baird & Adams; SIMPSON, P. U. S. Mus. xxii, p. 803; *S. spinosus*, n. n. for *Unio vestitus*, Heude, pars; SIMPSON, t. c. p. 804.
- Simonaias*, n. sect. of *Unio* for *U. tabascoensis*, Charp.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
- Spatha lacustris*, n. n. for *anceyi*, Brgt., 1894 nec 1885; SIMPSON, P. U. S. Mus. xxii, p. 898.
- Spathopsis*, n. subgen. of *Lamellidens* (q.v.), type *Anodonta guillaini*, Recluz; SIMPSON, t. c. p. 857.
- Sphaerium luridum*, N.W. Mexico, *costaricanum*, p. 552, Central Costa Rica; MARTENS, Biol. Centr.-Amer. figg. : n. spp.
- Sphenonaias*, n. sect. of *Unio* for *U. liebmanni*, Phil.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
- Spixicoconcha*, n. n. for *Aplodon*, Spix nec Rafinesque; PILSBRY, Nautilus vii, p. 30 [1893].
- †*Stutchburia*, n. gen. for *Orthonota costata*, Morris; ETHERIDGE, Rec. Austral. Mus. iii, p. 178.
- Styganodon*, n. subgen. of *Anodonta*, type *A. tenebricosa*, Lea; MARTENS, Biol. Centr.-Amer. p. 525.
- Suborbiculus*, n. sect. of *Pseudodon*, type *Monocondylus orbicularis*, Morel.; SIMPSON, P. U. S. Mus. xxii, p. 835.
- Trapezoideus*, n. gen., type *Unio foliacea*, Gould; SIMPSON, t. c. p. 858: *T. peninsularis*, n. n. for *Unio sumatrensis*, Sby. nec Lea; SIMPSON, t. c. p. 859.
- Triquetra*, n. subgen. of *Hyria*, type *Unio stevensi*, Lea; SIMPSON, t. c. p. 869.
- Unionida*, parasites of; KELLY (256): Notes on South American species; IHERING, Science xii, p. 857: Synonymy of the *parvus* group; CALL (576): *U. stolli*, n. n. for *U. nicklinianus*, Küster nec Lea; MARTENS, Biol. Centr.-Amer. p. 492: *U. pseudonymus*, n. n. for *Unio hueti*, Kob. nec Brgt.; SIMPSON, P. U. S. Mus. xxii, p. 694.
- Unio tschiliensis*, Tschili-Li; STURANY, Denk. Ak. Wien. lxx, p. 41, fig.: *U. proclinator*, Cuba, *championi*, p. 508, *radiatulus*, p. 518, *guatemalanus*, p. 519, W. Guatemala, *rubicundus*, p. 514, N. Guatemala; MARTENS, Biol. Centr.-Amer. figg.: *U. pressirostris*, p. 14, *stolatus*, *laticeps*, p. 15, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900: *U. fruhstorferi*, Annam; DAUTZENBERG, J. Conchyl. xlviii, p. 429: *U. ruginosus*, p. 93, *gibberulus*, p. 99, *lepidulus*, p. 104, Basin of Seine; DROUET, Mem. Ac. Dijon vii, figg.: *U. (Pleurobema) hagleri*, Alabama; FRIERSON, Nautilus xiii, p. 109, fig.: *U. kingii*, Georgia; WRIGHT, t. c. p. 138: *U. (Lampsilis) rovirosai*, Mexico; PILSBRY, t. c. p. 140: *U. schroederi*, Germany; SCHRÖDER (585), p. 224: *U. le-doulxianus*, Bagamoyo; CHARMES, Bull. Soc. malac. France ii, p. 173 [1885]: *U. sandriopsis*, p. 325, *ostiorum*, *turicus*, p. 327, *tiguricus*, p. 329, *duregicus*, p. 331, *subrobustus*, p. 332, Lake of Zurich; SERVAIN, t. c. [1885]: n. spp.
- Vesicomya*, note on genus; SMITH, P. Malac. Soc. London iv, p. 81.
- Virgula*, n. sect. of *Glabaris*, type *Glabaris ensiformis*, Spix; SIMPSON, P. U. S. Mus. xxii, p. 931.
- Virgus*, n. gen., type *Unio beccarianus*, T. Canefri; SIMPSON, t. c. p. 851.

## PSEUDOLAMELLIBRANCHIATA.

- †*Anomalomya*, n. gen., for *A. corrugata*, n. sp., Eocene; COSSMANN (581), p. 169.
- †*Aviculoperna*, n. sect. of *Avicula*, type *Perna aviculina*, Desh.; COSSMANN (581), p. 164.

- +*Aviculovulsa*, n. gen., type *Avicula macrotis*, Desh.; COSSMANN (581), p. 166.
- Chlamys bednalli*, note on, with figures; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 495.
- Chlamys (Equipekten) bavayi*, Cumana, Santa-Marta, Bahia Honda; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 226, fig.: n. sp.
- +*Mysidioptera*, Sal., on the genus; BITTNER, Jahrb. geol. Reichsanst. I, pp. 59-66, pl. vi.
- Ostrea (Alectryonia) darwini*, (*A.*) *reevei*, new names respectively for figg. 36a & 36b of Reeve's Conch. Icon. pl. xvii, as *O. imbricata*; MAYER-EYMAR, J. Conchyl. xlvii, p. 444 [1899].
- +*Pachyperna*, n. subg. of *Perna* for *P. laverdana*, n. sp., from the Venetian older tertiary; OPPENHEIM, Zeitschr. Deutsch. geol. Ges. lii, p. 237, fig.
- Palliolum*, n. sect. of *Pecten* for *P. incomparabilis*, Risso, etc.; MONTEROSATO (584), p. 5.
- Pectinidæ*, on the family with *Eupecten*, n. n. for *Pecten*, s. str.; PHILIPPI, Zeitschr. Deutsch. geol. Ges. lii, pp. 64-117: *P. irradians*, variation; DAVENPORT, Amer. Natural. xxxiv, p. 863.
- Pecten chazaliei*, Testigos Is., Tortuga I., Santa-Marta; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 228, fig.: n. sp.
- +*Pleuromectites*, on the genus; SALOMON, Zeitschr. Deutsch. geol. Ges. lii, pp. 348-359.
- +*Pseudomonotis*, on the genus; SALOMON, t. c. pp. 348-359.

## FILIBRANCHIATA.

- Eumodiolus*, n. subgen. of *Modiolus* for *M. modiolus*, L.; IHERING, P. Malac. Soc. London iv, p. 87.
- Eumytilus*, n. subgen. of *Mytilus* for *M. edulis*; IHERING, t. c. p. 86.
- Idas* is a synonym of *Myrina*; MARSHALL, J. Malac. vii, p. 169.
- Modiella*, n. gen. for *Modiola politus*, Verrill & Smith; MONTEROSATO (584), p. 12.
- Myrina simpsoni*, Aberdeen; MARSHALL, J. Malac. vii, p. 167, fig.: n. sp.
- Mytilidæ* of South America; IHERING, P. Malac. Soc. London iv, pp. 84-98.
- +*Planimodiola*, n. sect. of *Modiola*, type *M. sulcata*, Lam.; COSSMANN (581), p. 155.
- Rhomboidella*, n. gen. for *Modiola rhombea*, Berkl.; MONTEROSATO (584), p. 13.
- +*Semimodiola*, n. sect. of *Modiola*, type *M. hastata*, Desh.; COSSMANN (581), p. 154.
- Trichomya*, n. subgen. of *Mytilus* for *M. hirsutus*, Lamk.; IHERING, P. Malac. Soc. London iv, p. 87.

## PROTOBRANCHIATA.

- Glomus*, Jeffreys nec Gistel, renamed *Pristigloma*, q.v.
- Leda taphria*, n. n. for *L. celata*, Hinds nec Conrad; DALL (583).
- Leda chazaliei*, Santa-Marta; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 241, fig.: n. sp.
- Nucula*, locomotion; DREW (157).
- Nucula dalmasi*, Testigos Is., Gulf of Maracaibo, Santa-Marta; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 240, fig.: n. sp.

*Pristigloma*, n. n. for *Glomus*, Jeffreys nec Gistel; DALL, *Nautilus* xiv, p. 44.

*Solenomya*, locomotion in; DREW, *Science* xi, p. 171: Also (157).

*Yoldia*, locomotion; DREW (157): *Y. limatula*; DREW (156).

## V. AMPHINEURA.

### APLACOPHORA.

[None.]

### POLYPLACOPHORA.

*Acanthochites porosus*, parasite of; BRUCKER & TROUESSART, *C.R. Soc. Biol.* vii, p. 107: *A. discrepans*, radula; TEMPÈRE (523).

*Callochiton rufus*, S. Australia; ASHBY, *Tr. R. Soc. S. Austral.* xxiv, p. 87, fig.: n. sp.

*Chiton oruktus*, South Australia; MAUGHAN, *t. c.* p. 89, fig.: n. sp.

*Cryptoplax*, a South African species; SYKES, *J. Malac.* vii, p. 164.

*Ischnochiton*, three-valved specimen; SYKES, *t. c.* p. 164, fig.: Six-valved specimen; DALL, *Science* xii, p. 823.

*Ischnochiton (Stenochiton) pallens*, S. Australia; ASHBY, *Tr. R. Soc. S. Austral.* xxiv, p. 86, fig.: n. sp.

†*Trachypleura*, n. g. of *Chitonidae*, for *T. triado-marchica*, n. sp., from the Muschelkalk of Rüdersdorf; JAEKEL, *Zeitschr. Deutsch. geol. Ges.* lii, *Protok.* pp. 9-14, figg.

# VIII. BRACHIOPODA.

BY

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ASSISTED BY

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+*Neospirifer*, ? n. gen.; NIKITIN, t. c. p. 385.

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## IX. BRYOZOA.

BY

ARTHUR WILLEY, D.Sc.

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- A. mytili* (Dal.), p. 530, Taf. x, fig. 4; *hirsutum* (Flem.), p. 530, Taf. x, fig. 5; *gelatinosum* L., fig. 6; BIDENKAP, Fauna Arctica.
- Cryptopolyzoon*, n. n. for *Cryptozoon* Dendy; DENDY, Zool. Anz. xxiii, p. 391.
- Zoobotryon pellucidum* Ehr.; Isle of Pines (New Caledonia), also found in the Atlantic, Mediterranean, Red Sea and Indian Ocean, p. 450; PHILIPPS, Zool. Results (Willey), Part iv.

## PHYLACTOLÆMA.

- Plumatella fungosa* = *Alcyonella fungosa* Pallas, p. 2, *repens* L. var. *typica*, var. *emarginata*, p. 3; REMEŠ, Verh. Ges. Wien l.
- P. repens* L., freshwater, Alaska, San Francisco, Europe, p. 331; ROBERTSON, P. Washington Ac. ii.

# X. CRUSTACEA.

(Including GIGANTOSTRACA.)

BY

ALBERT WILLIAM BROWN, B.A., F.L.S.

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## INTRODUCTION.

THE RECORD of CRUSTACEA for 1900 is in every way larger than its immediate predecessors. Moreover the publications of the year are of considerable interest and importance and show that no decline is likely to take place in the energy with which the Class is studied. The largest Monograph of the year is EDWARDS & BOUVIER's beautiful volume on the *Crustacea* collected during the scientific expeditions of the Travailleur and Talisman. This volume contains descriptions of the *Brachyura* and *Anomura* and is designated "Crustacés décapodes, Première partie."

The systematic portion of this Record is very lengthy this year, the *Decapoda* comprising by far the greater portion of it. Some lengthy papers have also been issued dealing with fossil *Ostracoda*.

A place of importance must be given to the papers describing Messrs GAMBLE & KEEBLE's researches on the colour variation and the physiology of coloration in *Hippolyte varians*. The paper published in Quart. J. Micr. Sci. is admirably illustrated.

*Crustacea* have always been a favourite group for observations and experiment on variation and a considerable number of papers record observation on this subject and on such other subjects of general interest as Regeneration, Relation to Surroundings, Commensalism, etc. SCOURFIELD's method of examining the swimming habits of *Daphnia* may here be mentioned.

A useful summary of the Deep Sea Zoological work of the "Investigator" has been prepared by Major ALCOCK who has also issued Part VI. of his "Materials for a Carcinological Fauna of India."

The Editor of the "American Naturalist" has for some time past been issuing Synopses of North American Invertebrates which can hardly fail to be of service to collectors and lead to an increase in the number of workers in any group. Initial difficulties in studying many of the Arthropod groups are probably responsible for the comparatively small number of workers on them and such summaries as Miss RATHBUN & Miss RICHARDSON have issued will go a long way towards overcoming these initial difficulties in the case of American Students. A work which may be mentioned here is YOUNG's "Stalk-Eyed *Crustacea* of British Guiana, W. Indies and Bermuda." Criticism of the nomenclature of this book by STEBBING will be found in Nature, lxiv, p. 98.

Important contributions have been made by COUTIÈRE in his Monograph on the *Palæmonide* of the Fresh waters of Madagascar and by GIESBRECHT in his volume on "Die Asterocheriden des Golfes von Neapel."

GRUVEL & WELTNER, and especially the former Author, have given a good deal of attention to the *Cirripedia* during the year. On the other hand the amount of matter published on such groups as the *Amphipoda* and *Isopoda* is less than usual. SARS has completed his account of the *Crustacea* of Norway, vol. iii, and the high character of this model work is well maintained.

HOLT & BEAUMONT have published a useful paper on the *Schizopoda* of Ireland which is issued apparently in three forms, viz. as a part of the Tr. Dublin Soc., as one of the "Studies from the Marine Laboratory of the Royal Dublin Society" and as part of a "Survey of the Fishing Grounds, West Coast of Ireland." It is well to mention this fact to avoid confusion in the future.

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### 2. PHYSIOLOGY.

- Physiology of colouration in *Hippolyte varians* ; KEEBLE & GAMBLE (91).  
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### 3. DEVELOPMENT, &C.

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## 7. DISTRIBUTION.

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Distribution of British Subterranean *Amphipoda*, p. 143 ; CHILTON (26).

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Geographical distribution of Arctic Crustacea, p. 357 ; DOFLEIN (52).

Geographical distribution of Atlantic *Copepoda* ; CLEVE (32).

Distribution of Arctic *Cumacea* ; ZIMMER (190), p. 436.

## 8. CLASSIFICATION AND NOMENCLATURE.

Classification of the *Catometopa*, diagnoses of families etc. ; ALCOCK (2).

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Systematic position and Classification of *Asterocheridæ*, p. 45 ; GIESBRECHT (70).

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Index to Linnæan names of *Crustacea* ; SHERBORN (154).

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## 9. METHODS.

New method of examining living Entomostraca and similar small organisms ; SCOURFIELD (152), p. 396.

Method of preserving *Crustacea* ; SAYCE (146).

## 10. MISCELLANEOUS.

Plague of Octopus on the South Coast in relation to Crab and Lobster Fisheries ; GARSTANG (67).

Ravages of Crabs in China ; KUMAGUSU MINIKATA, Nature lxi, p. 491.

Perforation of boulders by an Isopod Crustacean, p. 348 ; STEAD (155).

## III. DISTRIBUTION.

## A. LAND AND FRESHWATER FORMS.

*Palearctic Region.*

## i. NEW SPECIES.

Sauve : n. sp. of *Cæcosphaeroma* ; DOLLFUS & VIRÉ (49).

Brandenburg : n. sp. of *Alona* ; HARTWIG (84) ; n. sp. of *Candona* ; HARTWIG (80) ; 2 n. spp. of *Candona* ; HARTWIG, SB. Ges. naturf. Berlin 1900, pp. 139 & 149.



- Switzerland : n. sp. of *Candona* ; KAUFMANN (88) : n. spp. of *Candona* ; KAUFMANN (89) : 3 n. gg. and 10 n. spp. of *Ostracoda* ; KAUFMANN (89).  
 Italy : 4 n. spp. of terrestrial *Isopoda* ; TUA (169).  
 Sardinia : n. sp. of *Porcellio* ; TUA (169).  
 Lake Baikal : n. sp. of *Calanidæ* ; SARS (138).

## ii. LOCAL FAUNÆ.

- Great Britain : Subterranean *Amphipoda* ; CHILTON (26).  
 Lough Ree, Ireland : *Entomostraca* ; KANE (87).  
 Italy : Terrestrial *Isopoda* ; TUA (169).—Near Rome : *Ostracoda* ; NAMIAS (107).  
 Birre : *Decapoda* ; GOURRET (72).  
 Switzerland : *Cypridæ* and *Darwinulidæ* ; KAUFMANN (88).  
 Germany : Freshwater *Copepoda* ; DOUWE (53).—North Germany, Inland Lake : *Mysis*, *Pallasiella* and *Pontoporeia* ; SAMTER & WELTNER (136).  
 Karthaus, Klostersee : *Crustacea* ; LAKOWITZ (95).  
 Saratow : Plankton *Crustacea* of the Volga ; ZYKOFF (192).  
 Balkans : *Diaptomidæ* ; STEUER (161).

## *Ethiopian Region.*

### i. NEW SPECIES.

- Madagascar : 2 n. spp. of *Palæmon* ; COUTIÈRE (38).

### ii. LOCAL FAUNÆ.

- Madagascar : *Palæmonidæ* ; COUTIÈRE (36) : *Macrura* ; COUTIÈRE (40).

## *Oriental Region.*

### i. NEW SPECIES.

- Borneo : n. sp. of *Potamon* ; BORRADAILE (14).

### ii. LOCAL FAUNÆ.

- Borneo : Freshwater *Decapoda* ; BORRADAILE (14).

## *Australian and Polynesian Region.*

### i. NEW SPECIES.

- Celebes : 2 n. spp. of *Cladocera* ; STINGELIN (163).  
 Victoria : n. g. of *Isopoda* ; SAYCE (141) : n. sp. of *Niphargus* ; SAYCE (142) : n. sp. of *Phreatoicus* ; SAYCE (143) : n. g. of *Isopoda* ; SAYCE (144).  
 Sandwich Is. : *Isopoda*, 4 n. spp. of *Armadillo* and n. sp. of *Geoligia* ; DOLLFUS (48).

### ii. LOCAL FAUNÆ.

- Celebes : *Cladocera* of fresh-water ; STINGELIN (163).  
 New Zealand : Fresh-water *Paranephrops* ; CHILTON (27).  
 Christmas Is. : Land *Crustacea* ; ANDREWS (5).  
 Sandwich Is. : *Talitridæ* ; STEBBING (158).

*Nearctic Region.*

N. America : *Isopoda* ; RICHARDSON (131).

New Mexico : n. sp. of *Cambarus* ; COCKERELL & PORTER (34).

## B. SALT LAKE FORMS.

Odessa : Crustacea of Salt Lakes ; BUTSCHINSKY (20).

Lake Urmi : *Crustacea* incl. n. sp. of *Artemia* ; GÜNTHER (79).

## C. MARINE FORMS.

*Arctic Seas.*

Arctic : *Crustacea* ; STEBBING, Ann. Nat. Hist. v, p. 1 : *Crustacea* ; STEBBING (159) : *Decapoda* ; DOFLEIN (52) : *Cirripedia* ; WELTNER (181) : *Cumacea* ; ZIMMER (190).

Spitzbergen : Plankton *Crustacea* ; CLEVE (29).

*Antarctic Seas.*

Antarctic : *Crustacea* ; COUTIÈRE (39) : *Decapoda* ; COUTIÈRE (41).

*British and N. European Seas.*

## i. NEW SPECIES.

North Sea : n. sp. of *Heterochaeta* ; AURIVILLIUS (8).

Faroe Channel : 2 n. spp. of *Amphipoda* ; NORMAN (114) : n. sp. of *Amphipoda* ; NORMAN (113) : *Amphipoda*, 3 n. spp. ; NORMAN, Ann. Nat. Hist. v.

Norway : n. sp. of *Cumacea* ; SARS (137).

N.E. of Butt of Lewis : n. sp. of *Amphipoda* ; NORMAN (115).

Liverpool Bay : n. sp. of *Leptosyllus* ; THOMPSON & SCOTT (167).

Alnmouth : 3 n. spp. *Crustacea* ; BRADY (17).

S.E. coast of England : n. sp. of *Amphipoda* ; NORMAN (116).

Plymouth : n. sp. of *Amphipoda* ; NORMAN (116).

## ii. LOCAL FAUNÆ.

North Sea : Plankton *Crustacea* ; CLEVE (31).

Norway : *Cumacea* ; SARS (137).

Skagerak : Plankton *Crustacea* ; CLEVE (31).

Gt. Britain : *Amphipoda* ; NORMAN (113-116).

Scotland : *Cumacea* ; SCOTT (149).

Fife : *Platyarthrus hoffmanseggii*, p. 186, EVANS, Ann. Scott. Nat. Hist. ix.

Firth of Clyde : *Crustacea* ; SCOTT (150).

Alnmouth : *Crustacea* ; BRADY (17).

Essex Coast : *Malacostraca* ; LOVETT (100).

English Channel : Plankton *Crustacea* ; CLEVE (31).

Salcombe Estuary : *Crustacea* ; ALLEN & TODD (4).

Falmouth : *Crustacea* ; VALLENTIN, J. Inst. Cornwall xiv.

W. Prussia : *Decapoda* ; SELIGO (153).

Europe : n. sp. of *Argulus* ; NETTOVICH (109).

*Atlantic Ocean.*

## i. NEW SPECIES.

Atlantic : *Amphipoda*, n. sp. of *Grubia* ; CHEVREUX (24) : 2 n. sp. of *Alpheidae* ; COUTIÈRE (42).

Angola : n. sp. of *Grapsus* ; DE MAN (47).

Monrovia : *Decapoda* n. sp. of *Clibanarius* ; RATHBUN (130).

Senegal : n. sp. of *Polonyx* (parasitic) ; SAINT-JOSEPH (135).

S. Africa : n. sp. of *Palinurus*, n. sp. of *Callianassa* ; STEBBING (156).

Near Azores : 5 n. spp. of *Verruca* ; GRUVEL (77) : 9 n. spp. of *Scalpellum* ; GRUVEL (75A).—Pico (near) : n. sp. of *Heterocarpus* ; EDWARDS & BOUVIER (57).

N. America : n. sp. of *Cyclodorippe* ; RATHBUN (127), p. 519.

Beaufort, N.C. : n. sp. of *Pinnixa* ; RATHBUN (128).

Galveston, Texas : n. sp. of *Uca* ; RATHBUN (128).

Pensacola, Florida : n. g. of *Pinnotheridae* ; RATHBUN (127).

Bogota : n. sp. of *Potamocarcinus* ; DOFLEIN (50).

Brazil : 6 n. spp. of *Decapoda* ; RATHBUN (129) : *Isopoda*, n. sp. of *Bopyrus* ; RICHARDSON (132) : n. g. of *Macrothricidae* ; SARS (139).

Argentina : *Stomatopoda*, n. sp. of *Lysiosquilla*, *Apodidae*, n. sp. of *Lepidurus* ; BERG (11).

Patagonia : 8 n. spp. of *Cladocera* ; EKMAN (59) : n. sp. of *Scalpellum* ; GRUVEL (75).

Falkland Islands : *Schizopoda*, n. sp. of *Euphausia* ; STEBBING, P. Z. S. 1900, p. 545.

Sargasso Sea : n. sp. of *Verruca* ; GRUVEL (77).

## ii. LOCAL FAUNÆ.

Atlantic : *Copepoda* ; CLEVE (32).

W. Coast of Ireland : *Schizopoda* ; HOLT & BEAUMONT (86).

W. Africa : *Decapoda* ; RATHBUN (130).

Angola : *Decapoda* ; DE MAN (47).

S. Africa : *Decapoda*, *Isopoda*, *Copepoda*, *Cirripedia* ; STEBBING, S. Afric. Crust. (156).

N. America : *Isopoda* ; RICHARDSON (131).

W. Indies : *Decapoda* and *Stomatopoda* ; YOUNG (189).

Bermuda : *Decapoda* and *Stomatopoda* ; YOUNG (189).

Cuba : *Crustacea* ; GUNDLACH (78).

British Guiana : *Decapoda* and *Stomatopoda* ; YOUNG (189).

Brazil : *Isopoda* ; RICHARDSON (132) : *Decapoda* and *Stomatopoda* ; RATHBUN (129).

Patagonia : *Cladocera* ; EKMAN (59).

Falkland Islands : *Decapoda*, *Schizopoda* and *Isopoda* ; STEBBING, P. Zool. Soc. London 1900, p. 517.

*Mediterranean Seas.*

## i. NEW SPECIES.

Toulon : n. sp. of *Chondracanthidae* ; VANEY & CONTE (172).

Bay of Naples : 3 n. spp. of *Copepoda* ; GIESBRECHT (71) : 2 n. spp. of *Asterocheride* ; GIESBRECHT (70).

Roumania : 8 n. spp. *Crustacea* ; COSMOVICI (35).

## ii. LOCAL FAUNÆ.

Bay of Naples : *Asterocheridæ* ; GIESBRECHT (70).  
 Hungary : *Crustacea* ; DADAY (45).  
 Roumania : *Crustacea* ; COSMOVICI (35).  
 Trieste : *Crustacea* ; GRAEFFE (73).

*Indian Ocean.*

## i. NEW SPECIES.

Indian Ocean : n. sp. of *Ethusa*, p. 474 ; McARDLE (102).  
 E. Africa : n. g. and 2 n. spp. of *Argulidæ* ; THIELE (164).  
 Djibouti : n. sp. of *Dichelaspis* ; GRUVEL (74).  
 Madagascar : n. sp. of *Callianassa* ; COUTIÈRE (37).  
 Suez : n. sp. of *Dichelaspis* ; GRUVEL (74).  
 Aden : n. sp. of *Dotilla* ; ALCOCK (2).  
 Persian Gulf : n. sp. of *Libystes* ; ALCOCK (2).  
 Andamans : 11 n. spp. of *Grapsoidæ* ; ALCOCK (2).  
 India : 16 n. spp. of *Grapsoidæ* ; ALCOCK (2) : 3 n. spp. of *Phyllopoda* ; SARS (140).  
 Ceylon, off W. coast : n. sp. of *Cyrtomaia* ; off N.E. coast : n. sp. of *Calocaris* ; McARDLE (101).

## ii. LOCAL FAUNÆ.

India : *Phyllopoda* ; SARS (140).  
 India and Ceylon : *Decapoda*, *Grapsoidæ* ; ALCOCK (2).

*Malaysian Seas.*

## i. NEW SPECIES.

Malay Archipelago : 2 n. spp. of *Caridina*, n. sp. of *Palæmon*, 2 n. spp. of *Potamon* ; NOBILI (111).  
 Sumatra : n. sp. of *Dichelaspis* ; GRUVEL (74).  
 Java : n. sp. of *Palæmon* ; NOBILI (112).  
 Singapore : 5 n. spp. of *Brachyura* ; LANCHESTER (97).  
 Malacca : n. sp. of *Brachyura* ; LANCHESTER (97).  
 Philippine Islands : n. sp. of *Lepas* ; GRUVEL (76).

## ii. LOCAL FAUNÆ.

Malay Archipelago : *Decapoda* and *Stomatopoda* ; NOBILI (111) : *Malacostraca* ; LANCHESTER (96).  
 Singapore : *Brachyura* ; LANCHESTER (97).  
 Malacca : *Brachyura* ; LANCHESTER (97).



*Pacific Ocean.*

## i. NEW SPECIES.

- San Pedro Bay, Calif. : n. sp. of *Raphonotus* ; RATHBUN (128).  
 Monterey Bay : n. sp. of *Cancer*, n. sp. of *Lophopanopeus* ; RATHBUN (126).  
 San Diego : 2 n. spp. of *Lophanopeus* ; RATHBUN (126).  
 Funafuti and Rotuma : n. sp. of *Sesarma* ; BORRADAILE (15).  
 Funafuti : n. sp. of *Xenocarcinoides* and n. sp. of *Pachygrapsus* ; BORRADAILE, P. Z. S. 1900 : n. sp. of *Armadillidium*, n. sp. of *Lithotrya* ; BORRADAILE (16).  
 Rotuma : n. sp. of *Pilumnus*, n. sp. of *Xanthias*, n. sp. of *Carpiliodes*, n. sp. of *Chlorodius* ; BORRADAILE, P. Z. S. 1900.  
 Papuasias, Moluccas and Australia : *Crustacea*, 10 n. spp. ; NOBILI (110).  
 Torres Straits : 2 n. spp. of *Brachyura* ; CALMAN (21).  
 Australia : n. sp. of *Sphyrion* ; THOR (168).  
 N.S. Wales : 4 n. spp. of *Decapoda* ; WHITLEGGE (186).  
 New Zealand : n. g. of *Schizopoda* ; THOMSON (167).—Otago, N.Z. : n. sp. of *Amphipoda* ; CHILTON (25).  
 Japan : n. sp. of *Panulirus* ; DOFLEIN (51) : n. g. of *Copepoda* ; EMBLETON (60) : 2 n. spp. of *Argulus* ; THIELE (164).

## ii. LOCAL FAUNÆ.

- N. America : *Isopoda* ; RICHARDSON (131).  
 Sandwich Islands : *Isopoda* ; DOLLFUS (49).  
 Fiji : List of *Brachyura* ; BORRADAILE (15), p. 570.  
 Funafuti : List of *Brachyura* ; BORRADAILE, P. Z. S. 1900, p. 568.  
 Rotuma : List of *Brachyura* ; BORRADAILE, P. Z. S. 1900, p. 569.  
 Papuasias, Moluccas and Australia : *Crustacea* ; NOBILI (110).  
 Torres Straits : *Brachyura* ; CALMAN (21).  
 N.S. Wales : *Decapoda* ; WHITLEGGE (186).  
 New Zealand : *Schizopoda* ; THOMSON (167).

*Habitat unknown.*

- 2 n. spp. of *Dichelaspis* ; GRUVEL (74).

## D. FOSSIL FORMS.

- Palæozoic, America : 9 n. spp. of *Ostracoda* ; ULRICH (170).  
 Upper Silurian, Prussia : *Leperditia* incl. 3 n. spp. ; CHMIELEWSKI (28).  
 Cretaceous, Rehna : *Ostracoda* ; GEINITZ & SCHACKO (68).—Upper Bavarian Alps : *Ostracoda* incl. n. sp. ; EGGER (58).  
 Upper Cretaceous, British Columbia : *Crustacea* incl. 4 n. spp. ; WOODWARD (188).  
 Gault, Folkestone : n. g. of *Decapoda* ; WOODWARD (187).  
 Tithonian : 2 n. spp. of *Ostracoda* ; CHAPMAN (23).  
 Tertiary, N. Germany : 40 n. spp. *Ostracoda* ; LIENENKLAUS (98).—Hungary : *Crustacea* incl. 27 n. spp. ; LÖRENTHEY (99).  
 Lower Miocene, Patagonia : n. sp. of *Scalpellum* ; ORTMANN (119).

## IV. SYSTEMATIC.†

## MALACOSTRACA.

## PODOPHTHALMA.

## DECAPODA.

[The following systematic papers deal with *Decapoda*:—ALCOCK (2), ALCOCK & ANDERSON (3A), BORRADAILE (14 & 15), CALMAN (21), CHILTON (27), COCKERELL & PORTER (34), COUTIÈRE (36–42), DOFLEIN (50–52), DE MAN (47), EDWARDS & BOUVIER (56 & 57), GOURRET (72), GUNDLACH (78), LANCHESTER (96 & 97), LÖRENTHEY (99), LOVETT (100), MARSH (104), McARDLE (102), NOBILI (110–112), RATHBUN (126–130), SAINT-JOSEPH (135), SELIGO (153), STEBBING (156, 157, 159), WHITLEGGE (186), WOODWARD (187 & 188), YOUNG (189).]

- Achæus lacertosus*, pl. xxxiii, figg. 1 & 1a; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *A. cursor*, p. 161, pls. xxi, figg. 15 & 16, xxii, figg. 1–3; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Achelous rubro-marginatus*, Singapore, p. 746, pl. xlv, fig. 8; LANCHESTER, P. Z. S. 1900, n. sp.
- Actæa nodulosa* var. *bullifera*, pl. xxxvii, fig. 2, *echinus*, pl. xxxvii, fig. 3, *flosculata*, pl. xxxvii, fig. 4; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *A. calculosa*, notes, p. 8; CALMAN, Tr. Linn. Soc. viii. *A.*, miscellaneous notes on various spp. of the g. from Singapore and Malacca, p. 733; LANCHESTER, P. Z. S. 1900. *A. pulchella* var. *modesta*, notes, discussion of possible identity of *A. pulchella* and *A. modestus*, p. 251; LANCHESTER, Ann. Nat. Hist. vi.
- Actæodes tomentosus*, notes on specimens from Singapore, p. 734; LANCHESTER, P. Z. S. 1900.
- Actæomorpha lapillulus*, pl. xxviii, fig. 3, *morum*, pl. xxviii, fig. 4; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Actæopsis* n. g. of *Brachyura* defined for *pallida*, Singapore [= *Carpiliodes pallidus* Borradaile] p. 741, pl. xlv, fig. 6; LANCHESTER, P. Z. S. 1900.
- Actumnus fissifrons*, pl. xxxviii, fig. 5, *arbutum*, pl. xxxviii, fig. 6, *tessellatus*, pl. xxxviii, fig. 9; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Ægeon cataphractus*, notes, p. 50; STEBBING, S. Afric. Crust.
- Albunea elegans*, p. 273, pl. xxviii, figg. 22–25; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Alpheida*, key to W. African genera, p. 312; RATHBUN, P. U. S. Mus. xxii.
- Alpheus shearmeii*, pl. xli, fig. 4 & 4a; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Anamathia rissoana*, p. 138, pl. xx, fig. 11; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Anapagurus dubius*, p. 215, pl. xxviii, figg. 1–8, *lævis*, p. 217, pl. xxviii, figg. 9 & 10, *bicorniger*, p. 220, pl. xxv, figg. 14–22, *brevicarpus*, pl. xxv, figg. 23–26, xxviii, figg. 11; EDWARDS & BOUVIER, t. c.
- Anilocra capensis*, distinction from other spp. of g., p. 57; STEBBING, S. Afric. Crust.
- Arctus crenatus*, N. S. Wales, p. 194, fig. 14; WHITLEGGE, Mem. Austral. Mus. iv, n. sp.

† This sign when prefixed to a quotation indicates a fossil form or forms. Where the character of a reference is not indicated the words “described” or “descriptive notes” are to be understood.

- Astaconephrops*, n. g. of *Decapoda reptantia* for *albertisii*, Katau, ♀ descr., p. 244; NOBILI, Ann. Mus. Genova xl, n. sp.
- Astacopsis australasiensis*, Bay of Sydney, descr., p. 247; NOBILI, t. c.
- Astacus*, synonymy and remarks, p. 33, *capensis*, descr., p. 34; STEBBING, S. Afric. Crust.
- Atya brevirostris* var. *de mani*, Fiume Sereinu, p. 475; NOBILI, Ann. Mus. Genova xl.
- Atyidae*, key to W. African genera, p. 313; RATHBUN, P. U. S. Mus. xxii.
- Automate rugosa*, Atlantic, p. 357; COUTIÈRE, C.R. Ac. Sci. cxxxi, n. sp.
- Baptozius vinosus*, pl. xxxviii, fig. 3; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Benthescymus investigatoris*, pl. xli, fig. 2; ALCOCK & ANDERSON, t. c.
- Bithynis*, key to W. African spp., p. 315; RATHBUN, P. U. S. Mus. xxii.
- Calappa*, key to W. African spp., p. 296; RATHBUN, t. c. *C. pustulosa*, pl. xxviii, fig. 1, *wood-masoni*, pl. xxviii, fig. 2; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- +*C. heberti*, Tertiary, Hungary, p. 113, pls. viii, figg. 1-3, ix, fig. 1; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii.
- +*Calappilia dacica*, Tertiary, Hungary, p. 39, pl. i, figg. 5a & 6; LÖRENTHEY, t. c.
- Calastacus felix*, pl. xlii, figg. 3 & 3a; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Calcinus talismani*, p. 173, pl. xxiii, figg. 15-18; EDWARDS & BOUVIER, Decap. Exped. Trav. *C. sulcatus*, colour of Brazilian specimens, p. 144; RATHBUN, P. Washington Ac. ii.
- Callianassa*, key to W. African spp., p. 308; RATHBUN, P. U. S. Mus. xxii. *C. lignicola*, pl. xlii, figg. 2-2b; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. martensi*, Buntal, p. 261, pl. xii, figg. 4 & 4a, notes on a ♂; LANCHESTER, Ann. Nat. Hist. vi. *C. turnerana*, Cameroons, Fresh-water, notes, p. 3; NOBILI, Boll. Mus. Torino xv, No. 379. *C.*, list of n. spp. since A. Milne-Edwards' revision of g., p. 38; STEBBING, S. Afric. Crust.
- +*C. fraasi*, Tertiary, Hungary, p. 95, pl. v, fig. 4, LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii. +*C. whiteavesii*, notes, p. 435, pl. xvii, figg. 2a & b; WOODWARD, Geol. Mag. vii, 1900.
- C. kraussi*, Gordon's Bay, Cape of Good Hope, p. 39, pls. 2 & 3; STEBBING, S. Afric. Crust. *C. grandidieri*, Madagascar, descr. and fig., p. 285; COUTIÈRE, Bull. Mus. Paris 1899, n. spp.
- +*C. rákosiensis*, p. 131, pl. ix, figg. 4a-4c, *brocchii*, p. 132, pl. ix, figg. 5a-5c, Tertiary, Hungary; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii, n. spp.
- Callianassidae*, key to W. African genera, p. 308; RATHBUN, P. U. S. Mus. xxii.
- Callinectes*, key to W. African spp., p. 290; RATHBUN, t. c. *C. diacanthus*, p. 71, pl. iv, fig. 5; EDWARDS & BOUVIER, Decap. Exped. Trav. *C. marginatus*, Angola, p. 41, pl. i, fig. 5; DE MAN, Mem. Soc. zool. France xiii. *C. marginatus*, colour of Brazilian specimens, p. 142; RATHBUN, P. Washington Ac. ii.
- Calocariscus alcocki*, off N.E. Ceylon, p. 476; McARDLE, Ann. Nat. Hist. vi, n. sp.
- Camatopsis*, g. def., p. 328, *rubida*, p. 329; ALCOCK, J. Asiat. Soc. Bengal lxi.
- Cambarus gallinus*, Gallinas R., Las Vegas, New Mexico, p. 434; COCKERELL & PORTER, P. Ac. Philad. 1900, n. sp.
- Cancellus parfaiti*, p. 183, pl. xxiii, figg. 20-30; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Cancer pagurus*, monstrosity, p. 80, pl. i; BOLAM, Hist. Berwick Club xvii: meristic variation in, p. 484; PATTERSON, Zoologist lvi.

- C. jordani*, Monterey Bay, p. 133; RATHBUN, Amer. Natural. xxxiv, n. sp.  
 +*C. böckhi*, p. 74, pl. iv, fig. 5, *szontaghi*, p. 120, pl. viii, figg. 4a-d, Tertiary, Hungary; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii, n. spp.  
*Carcinoplax*, g. defined, p. 301, *longimanus*, *longipes*, descr., p. 303; ALCOCK, J. Asiat. Soc. Bengal lxix. *C. subinteger*, alteration of specific name from *C. integer* de Man, p. 750, pl. xlvii, fig. 9, var. *hirsutior* nov., Singapore, p. 751; LANCHESTER, P. Z. S. 1900.  
*Carcinus maenas*, occurrence in Port Phillip, Australia, p. 206; FULTON, Victorian Natural. xvii.  
*Cardiosoma*, g. def., p. 444, *carnifex*, p. 445, *hirtipes*, p. 447; ALCOCK, J. Asiat. Soc. Bengal lxix.  
*Caridina modiglianii*, Kifa-juc, *atyoides*, Si Oban, p. 478; NOBILI, Ann. Mus. Genova xl, n. spp.  
 +*Carinocarcinus*, n. g. for *zittellii*, Tertiary, Hungary, p. 196, pl. i, figg. 1a-d, LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii.  
 +*C.* sp., p. 94, sp., p. 96, pl. v, figg. 5a & 5b, *spinosa*, p. 97, pl. v, fig. 6, Tertiary, Hungary; LÖRENTHEY, t. c., n. spp.  
*Carpilius corallinus*, p. 367; GUNDLACH, An. Ac. Habana xxxvi.  
*Carpilodes lophopus*, pl. xxxvi, fig. 2, *pediger*, pl. xxxvi, fig. 4, *cariosus*, pl. xxxvi, fig. 7; ALCOCK & ANDERSON, Illustr. Zool. Investigator.  
*C. pallidus*, Rotuma, descr., p. 586, pl. xl, fig. 3; BORRADAILE, P. Z. S. 1900. *C. socius*, Singapore, descr., p. 731, pl. xlv, fig. 4; LANCHESTER, P. Z. S. 1900, n. spp.  
*Catapaguroides microps*, p. 207, pl. xxiv, figg. 17-29, *megalops*, p. 210, pl. xxv, figg. 1-5, *acutifrons*, p. 212, pl. xxv, figg. 6-11; EDWARDS & BOUVIER, Decap. Exped. Trav.  
*Catapagurus muricatus*, pl. xxxi, figg. 3-3c; ALCOCK & ANDERSON, Illustr. Zool. Investigator.  
*Catoptrus*, g. defined, p. 307, *nitidus*, descr., p. 307; ALCOCK, J. Asiat. Soc. Bengal lxix.  
*Ceratoplax* g. def., p. 319, *ciliata*, p. 320; ALCOCK, t. c.  
*C. hispida*, Palk Sts., p. 321; ALCOCK, t. c. n. sp.  
*Charybdis rivers-andersoni*, pl. xlvii, fig. 3, *investigatoris*, pl. xlvii, fig. 4; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. merguensis*, Amboina, notes on ♂, p. 254; NOBILI, Ann. Mus. Genova xl.  
*Chasmocarcinops*, n. g. def. for *gelasimoides*, off Madras, p. 334; ALCOCK, J. Asiat. Soc. Bengal lxix, n. sp.  
*Chlorinoides longispinus*, pl. xxxiv, figg. 4-4b; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. aculeatus*, Singapore and Malacca, criticism of var. *armatus*, p. 724; LANCHESTER, P. Z. S. 1900.  
*C. waitei*, N. S. Wales, p. 143, pl. xxxiii; WHITLEGGE, Mem. Austral. Mus. iv, n. sp.  
*Chlorodius americanus*, p. 371; GUNDLACH, An. Ac. Habana xxxvi.  
*C. barbatus*, Funafuti and Rotuma, descr., p. 587, pl. xli, fig. 4; BORRADAILE, P. Z. S. 1900, n. sp.  
*Chlorodopsis wood-masoni*, pl. xxxviii, fig. 7; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. pilumnoides*, possible distinction in colouring between the sexes, p. 737; LANCHESTER, P. Z. S. 1900.  
*Clibanarius*, key to W. African spp., p. 304; RATHBUN, P. U. S. Mus. xxii.  
*C. antillensis*, colour of Brazilian specimens, p. 144; RATHBUN, P. Washington Ac. ii. *C. strigimanus*, p. 167; WHITLEGGE, Mem. Austral. Mus. iv.  
*C. cooki*, Monrovia, ♂ descr., p. 305 and figg.; RATHBUN, P. U. S. Mus. xxii, n. sp.  
*Clistoceloma* g. def., p. 428, *balansæ*, p. 429, *merguinse*, p. 429; ALCOCK, J. Asiat. Soc. Bengal lxix.  
*Clistostoma*, g. def., p. 372, *dotilliforme*, Karachi, p. 373; ALCOCK, t. c. n. sp.



- +*Caeloma vareolata*, Tertiary, Hungary, p. 206, pl. ii, figg. 5a-5e; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii, n. sp.
- Crangon antarcticus*, notes, p. 1266; COUTIÈRE, C.R. Ac. Sci. cxxx: S. Georgia, p. 240; COUTIÈRE, Bull. Mus. Paris 1900.
- Crangonidae*, discussion of the family, p. 46, key to genera, p. 49; STEBBING, S. Afric. Crust.
- Cryptocnemus haddoni*, Mer, Torres Sts., p. 25, pl. i, figg. 4-8; CALMAN, Tr. Linn. Soc. viii, n. sp.
- +*Cyamocarcinus angustifrons*, Tertiary, Hungary, p. 69, pl. iii, figg. 2a-2d; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii.
- Cyclodorippe plana*, N. America, p. 519; RATHBUN, Amer. Natural. xxxiv, n. sp.
- Cyclograpsus occidentalis*, p. 111, pl. xviii, figg. 1-5; EDWARDS & BOUVIER, Decap. Exped. Trav. *C. occidentalis*, Angola, p. 57; DE MAN, Mem. Soc. zool. France xiii.
- C. beccarii*, Dorei, p. 270; NOBILI, Ann. Mus. Genova xl, n. sp.
- Cycloxanthops denticulatus*, note on colour of Brazilian specimens, p. 138; RATHBUN, P. Washington Ac. ii.
- Cycloxanthus lineatus*, variation from M. Edwards' species, p. 735; LANCHESTER, P. Z. S. 1900.
- Cymo quadrilobatus*, pl. xxxviii, fig. 8; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Cymonomus granulatus*, p. 34, pl. xi, figg. 5-19; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Cyrtomaria goodridgei*, off W. Coast of Ceylon, p. 472; MCARDLE, Ann. Nat. Hist. vi, n. sp.
- Dehaanivus* g. characterised, p. 18, *dentatus*, notes, p. 19; STEBBING, S. Afric. Crust.
- Diceranodromia mahyeuxi*, descr., p. 14, pls. iii, fig. 4, ix, figg. 1-11; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Diogenes*, key to W. African spp., p. 306; RATHBUN, P. U. S. Mus. xxii.
- Diptychus rubro-vittatus*, p. 356, pl. xxxii, figg. 6-14, *nitidus*, p. 360, pls. iv, fig. 4, xxxii, figg. 15-19; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Dorippe facchino*, Singapore and Malacca, commensal with anemones, p. 769; LANCHESTER, P. Z. S. 1900.
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- Thaumatoessa armoricana*, notes on parasitism etc., p. 395; GIARD, Bull. Soc. ent. France 1900.

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*Lepas denticulata*, Honda, Philippines, p. 241, GRUVEL, t. c., n. sp.

*Lithotrya pacifica*, Funafuti, p. 798, pl. li, figg. 3 & 3a; BORRADAILE, P. Z. S. 1900, n. sp.

*Scalpellum patagonicum*, Patagonia, p. 188, *edwardsi*, Atlantic, p. 189, *recurvitergum*, S.W. Azores, p. 190, *longirostrum*, Atlantic, p. 190, *atlanticum*, Azores, p. 190, *striatum*, E. of Azores, p. 191, *alatum*, Cape Cautin, p. 192, *luteum*, S.W. of the Azores, p. 192, *curvatum*, Azores, p. 193, *talismani*, Atlantic, p. 193; GRUVEL, Bull. Mus. Paris 1900, n. spp.

†*Scalpellum juliense*, San Julian, Patagonia, p. 377; ORTMANN, Amer. J. Sci. x, n. sp.

*Tubicinella trachealis*, mode of growth, p. 1; MARLOTH, Tr. S. African Soc. xi. *T. trachealis*, descr., p. 62; STEBBING, S. Afric. Crust.

*Verruca longicarinata*, Sargasso Sea, p. 242, *erecta*, Azores, p. 243, *linearis*, Azores, p. 243, *trisulcata*, Azores, p. 243, *striata*, Is. of Cape Verd, p. 244, *imbricata*, Atlantic, p. 244; GRUVEL, Bull. Mus. Paris 1900, n. spp.

## GIGANTOSTRACA

i.e., TRILOBITA, XIPHOSURA and EURYPTERIDA.

## I. TITLES.

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## II. BIOLOGY.

Restoration of *Stylonurus lacoanus*; BEECHER (1).  
Notes on the British spp. of *Conocoryphe*; REED (7).

## III. DISTRIBUTION.

Palæozoic. China: 2 n. gg. and 6 n. spp. of Trilobites; BERGERON (2).  
Cambrian. Newfoundland: *Trilobita*; MATTHEW (5).  
Lower Cambrian. E. Massachusetts: *Trilobita*; BURR (3).  
Upper Cambrian. British Columbia: *Trilobita* incl. 5 n. spp.; MATTHEW (4).  
Lower Silurian. Baffin Land; Trilobites incl. n. sp.; SCHUCHERT (9).  
Wenlock Shales. Malvern: 2 n. spp. Trilobites; THOMAS (11).  
Shinerton Shales. Shropshire: n. sp. of *Olenus*; THOMAS (11).  
Etcheminian. Smith Sound, Newfoundland: *Trilobita*; MATTHEW (6).  
Lower Carboniferous. Schleswig-Holstein: Trilobites incl. 4 n. spp.; SCUPIN (10).

## IV. SYSTEMATIC.

### TRILOBITA.

- †*Agnostus montis*, Upper Cambrian, British Columbia, p. 43, pl. i, fig. 6; MATTHEW, Tr. R. Soc. Canada v.  
†*A. donvillei*, Palæozoic, China, p. 503, pl. xiii, fig. 3; BERGERON, Bull. Soc. geol. France xxvii, n. sp.  
†*Agraulus strenuus* var. *nasutus*, p. 46; BURR, Amer. Geol. xxv.  
†*Aptychopsis terranovicus*, Upper Limestone, Newfoundland, p. 118, pl. vii, figg. 5 & 6; MATTHEW, Tr. R. Soc. Canada v, Sect. iv.



- †*Arthricocephalus*, n. g. def. for *chauveaui*, Palæozoic, China, p. 514, fig. 9 in text; BERGERON, Bull. Soc. geol. France xxvii, n. sp.
- †*Atops trilineatus*, Cambrian, Newfoundland, p. 89, pl. iv, fig. 8; MATTHEW, Tr. R. Soc. Canada v.
- †*Avalonia plana*, Cambrian, Newfoundland, p. 81, pl. iv, fig. 7; MATTHEW, t. c., n. sp.
- †*Bathyriscus pupa*, Upper Cambrian, British Columbia, p. 51, pl. ii, fig. 5; MATTHEW, t. c., n. sp.
- †*Calymmene sinensis*, Palæozoic, China, p. 500, pl. xiii, figg. 1 & 2; BERGERON, Bull. Soc. geol. France xxvii, n. sp.
- †*Conocephalites* cf. *perseus*, Upper Cambrian, British Columbia, p. 46, pl. ii, fig. 4; MATTHEW, Tr. R. Soc. Canada v.
- †*Corynexochus ramingeri*, Upper Cambrian, British Columbia, p. 47, pl. ii, fig. 3; MATTHEW, t. c., n. sp.
- †*Dalmanites goodridgii*, Lower Silurian, Baffin Land, p. 174, pl. xii, figg. 5 & 6; SCHUCHERT, P. U. S. Mus. xxii, n. sp.
- †*Dicellosephalus sinensis*, Palæozoic, China, p. 508, pl. xiii, fig. 7; BERGERON, Bull. Soc. geol. France xxvii, n. sp.
- †*Dolichometopus occidentalis*, Upper Cambrian, British Columbia, p. 49, pl. ii, fig. 2; MATTHEW, Tr. R. Soc. Canada v, n. sp.
- †*Dorypyge dawsoni*, Upper Cambrian, British Columbia, p. 56, pl. iii, fig. 1; MATTHEW, t. c.
- †*Drepanura*, n. g. def. for *premesnili*, Palæozoic, China, p. 509, pl. xiii, fig. 8; BERGERON, Bull. Soc. geol. France xxvii, n. sp.
- †*Erinnys breviceps*, Cambrian, Newfoundland, p. 91, pl. iv, fig. 9; MATTHEW, Tr. R. Soc. Canada v.
- †*Griffithides damesi*, nom. nov. for *Archegonus equalis*, p. 10, pl. i, fig. 7; SCUPIN, Zeitschr. Deutsch. geol. Ges. lii.
- †*G. frechi*, p. 12, pl. i, fig. 6, *depressus*, p. 13, pl. i, fig. 5, *claviger*, p. 14, pl. i, figg. 6 a, b, and 9, Lower Carboniferous, Schleswig-Holstein; SCUPIN, t. c., n. spp.
- †*Metadoxides magnificus*, p. 46; BURR, Amer. Geol. xxv. †*M. magnificus*, Cambrian, Newfoundland, p. 83, pl. viii, figg. 1a-c; MATTHEW, Tr. R. Soc. Canada v.
- †*Micmacca walcotti*, p. 79, pl. iv, figg. 5a-d, *angimargo*, p. 80, pl. iv, fig. 6, Cambrian, Newfoundland; MATTHEW, t. c., n. sp.
- †*Microdiscus* cf. *helenae*, p. 47; BURR, Amer. Geol. xxv. †*M. belli-marginatus*, p. 75; MATTHEW, Tr. R. Soc. Canada v.
- †*Neolenus*, n. g. def. for *serratus* (= *Ogygia serrata* Roem.), p. 53; MATTHEW, t. c.
- †*N. granulatus*, Upper Cambrian, British Columbia, p. 55, pl. ii, figg. 1a-c; MATTHEW, t. c., n. sp.
- †*Neseuretus recurvatus*, p. 307, pl. xii, fig. 4, *quadratus*, p. 307, pl. xii, fig. 5, sp. ?, p. 308, pl. xii, fig. 6, Tremadoc, Ramsey Is.; REED, Geol. Mag. vii.
- †*Obolella atlantica*, p. 47, sp., p. 48; BURR, Amer. Geol. xxv.
- †*Olenellus broggeri*, p. 43, *asaphoides*, p. 45, sp., p. 45; BURR, t. c.
- †*Olenoides leblanci*, Palæozoic, China, p. 506, pl. xiii, figg. 5 & 6; BERGERON, Bull. Soc. geol. France xxvii, n. sp.
- †*Olenus planti*, p. 303, pl. xii, fig. 1, *expansus*, p. 306, pl. xii, figg. 2 & 3, Upper Lingula Flags, Mocl Gron; REED, Geol. Mag. vii.
- †*O. mitchinsoni*, Shineton Shales of Shineton, Shropshire, p. 619, pl. xxxv, figg. 5 & 6; THOMAS, Quart. J. Geol. Soc. lvi, n. sp.
- †*Orthotheca cylindrica*, p. 48; BURR, Amer. Geol. xxv.
- †*Oryctocephalus walkeri*, Upper Cambrian, British Columbia, p. 60, pl. iii, fig. 2; MATTHEW, Tr. R. Soc. Canada v, n. sp.
- †*Phacops coronatus*, Wenlock Shales, Malvern, p. 616, pl. xxxv, figg. 1-4, *nobilis*, Wenlock Shales, Brecknockshire, p. 617, pl. xxxiv, fig. 13; THOMAS, Quart. J. Geol. Soc. lvi.

- †*Phillipsiaca qualis*, p. 2, pl. i, figg. 10-12, *longicornis*, p. 5, *gemmulifera*, p. 6, *truncatula*, p. 7, pl. i, fig. 4, sp., p. 10; SCUPIN, Zeitschr. Deutsch. geol. Ges. lii.
- †*P. silesiaca*, Lower Carboniferous, Schleswig-Holstein, p. 8, pl. i, figg. 1-3; SCUPIN, t. c., n. sp.
- †*Pychoparia cordillerae*, Upper Cambrian, British Columbia, p. 44, pl. i, fig. 7; MATTHEW, Tr. R. Soc. Canada v.
- †*Strenuella strenua*, p. 76, pl. iv, fig. 3, *attleborensis*, p. 77, pl. iv, figg. 4a-c, Cambrian, Newfoundland; MATTHEW, t. c.

## EURYPTERIDA and XIPHOSURA.

- †*Stylonurus lacoanus*, restoration, p. 145; BEECHER, Amer. J. Sci. x.



# XI. ARACHNIDA.

BY

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## INTRODUCTION.

FEW general remarks need be made on the Record of Arachnida for 1900. There is a slight increase in the number of Titles, but these for the most part deal with descriptions of new or old species and do not therefore call for special mention. A study of the Distribution Section of this Record will show that considerable effort was spent on Palæarctic Arachnida during 1900, whilst a similar examination of the Systematic list will reveal the increasing attention devoted to orders other than the Araneæ and Acari. The Scorpions in particular are becoming a far better known group.

POCOCK (74) makes certain criticisms on and mentions omissions from KRAEPELIN'S Scorpiones in "Das Tierreich."

POCOCK'S volume on the Arachnida in "The Fauna of British India" seems to be the largest work of the year and is in every way an excellent monograph. It is much to be regretted that works of this type are not more common.



Considerable progress was made during the year with the second volume of "Arachnida Araneida" in the *Biologia Centrali-Americana*, whilst more plates of Volume I were issued. Volume II makes certain changes in the nomenclature and specific determinations of Volume I.

SIMON has published two lengthy and important papers on the Attidæ, preparatory to the publication of the next part of "Les Araignées" which will be recorded for the year 1901.

The Recorder much regrets having hitherto overlooked two parts (vii and viii) of CANESTRINI'S "Prospetto dell' Acarofauna italiana," a work containing a number of papers by other specialists. He has further to call attention to an unfortunate error in the Geographical Section of the Record for 1897. The slips recording two of SIMON'S papers for that year apparently got misplaced. The correction of the resulting errors will be found in the Distribution Section.

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### 1. *Morphology.*

Anatomy of *Norneria gigas*; NORDENSKIÖLD (59A).  
 Structure of the Red Spiders of the United States; BANKS (7), p. 67.  
 Nervous System of *Phalangidae*; APPELT (3).  
 Tracheal system of *Araneae*; LAMY (47).  
 Palpi of Male Spiders; ROBERTSON (84).  
 Observations on structure of the ♂ rostrum of *Ixodes redurivius* as a copulatory organ; LEWIS (51).

Copulatory organs of *Arrenurus*; THON (105).

*Kenenia mirabilis*, structure, p. 837; WHEELER, Amer. Natural. xxxiv.

Polymorphism amongst *Gamasidae*; FOA (38).

## 2. Embryology.

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Parthenogenesis amongst *Gamasidae*; FOA (38).

Copulation in *Ixodes reduvius*; LEWIS (51).

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The Accessory Chromosome in the Spider; WALLACE (123).

## 3. Classification and Nomenclature.

*Scorpiones*. Order characterised, discussed, and classified, pp. 5-12; POCKOCK (68).

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Classification of *Hydrachnidae*; THOR (108).

Account of the Italian spp. of *Listrophoridae*; CANESTRINI (24), *Canestrinidae*; CANESTRINI (25), *Demodicidae*; CANESTRINI (27).

The genus *Eriophyes*; NALEPA (59).

Key to spp. of *Trichotarsus*, p. 375; GIARD (41).

Table of British spp. of *Cnephalocotes*, p. 203; CARPENTER (28).

Correction of key to *Sarcoptidae* published in "Das Tierreich," p. 121; OUDEMANS (60).

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Criticisms on the nomenclature and classification of *Scorpiones* and notes on omission of certain spp. from "Das Tierreich"; POCKOCK (74).

Synonymy of Russian Scorpions; BIRULA (12).

Synonymy of *Philodromus generalii*; CASTELLI (29).

Changes in nomenclature of the *Oribatidae*; OUDEMANS (62).

Names for "Spider"; TREGGAR (112).

Linnaean names of *Arachnida*; SHERBORN (87).

N.B. All special cases of changes of names of genera and species are enumerated in their places in IV. Systematic.

## 4. Habits and Biology.

Growth and Development of Instincts in Young Spiders; SARGENT (86).

Biology and Habits of *Argyroneta aquatica*; WAGNER (122).

Biology of Spiders; WESTBERG (126).

Biology of *Acari*; LEONARDI (48).

Method of fixing itself to host of *Agave chitonis*, p. 107; BRUCKER & TROUSSERT (17).

Accidental parasitism in Man of a Phytoparasitic Acarid; ARTAULT (4).

List of the *Acari* commensal with or parasitic on Ants; LEONARDI, p. 848, in CANESTRINI'S Prospet. Acarof. Ital. vii.

Nesting Habits of *Theridion lineatum*, p. 105; WILLANS, Tr. Scottish Nat. Hist. Soc. i, 1900.



Habits of *Pacilotheria*; POCKOCK (76).

Habits of *Kænenia mirabilis*, p. 248; WHEELER (127).

Habits of Spiders; LONGLEY (52).

Habits of S. African Ticks; LOUNSBURY (54).

Habits of the Red Spiders of the United States; BANKS (7), p. 69.

A Hunting Spider; WHITE (128).

Bites of *Arachnida*; LOUNSBURY (55).

### 5. *Miscellaneous.*

Evolution of certain spp. of *Acari*; TIETZE (111), p. 934.

Preparation of *Acari* for examination; TIETZE, p. 935 (111).

Geographical distribution of certain Italian *Acari*, pp. 931-934; TIETZE (111).

## III. DISTRIBUTION.

### *Palearctic Region.*

#### i. DISTRIBUTION OF THE NEW SPECIES.

Europe: n. sp. of *Eriophyes*; NALEPA (58).

Greenland: *Acari*, 3 n. spp. of *Phytoptidae*; ROSTRUP (85).

Finland: n. sp. of *Scutovertex*; OUDEMANS (60).

Norway: 3 n. spp. of *Hydrachnidae*; THOR (109).

Skarnodal: *Araneæ*, n. sp. of *Drassus*; STRAND (102): 2 n. spp. of *Xysticus*; STRAND (103).

Nadelholz: *Araneæ*, n. sp. of *Xysticus*; STRAND (103).

Kasnakow: n. sp. of *Thelyphonidae*; TARNANI (104).

England: n. sp. of *Arrenurus*; GEORGE (40).

Lancashire: n. sp. of *Agalena*; CARPENTER (28), p. 199.

Ulster: n. sp. of *Arrenurus*; HALBERT (42).

Holland: n. sp. of *Notaspis*; OUDEMANS (63).

Marseilles: n. subsp. of *Halacarida*; TROUESSART (115, 117).

Wimereux: n. sp. of *Trichotarsus*; GIARD (41).

E. Prussia: 3 n. spp. of *Hydrachnidae*; PROTZ (81).

Province of the Rhine: 9 n. spp. of Spiders; BOSENBERG (16).

Trentine Alps: n. sp. of *Trombidium*; BUFFA (18).

Italy: 4 n. spp. of *Oribatidae*; COGGI (33).—4 n. spp. of *Acari* commensal with Ants; LEONARDI (49).—2 n. spp. of *Acari*; TIETZE (111).

San Remo: 2 n. spp. of *Notaspis*; OUDEMANS (64): 2 n. spp. of *Acari*; OUDEMANS (61).

Macognaya near Monte Rosa: n. sp. of *Camisia*; OUDEMANS (60).

Portici: 5 n. spp. of *Acari*; LEONARDI (50).

Bologna: n. sp. of *Notaspis*; COGGI (34).

Sicily: *Acari*, n. sp. of *Glyciphagus*; SICHER (88).

Hungary: n. g. and 2 n. spp. of *Hydrachnidae*; THON (106 & 107).

Asia Minor: n. sp. of *Euscorpius*; BIRULA (14).

Astracan: *Scorpiones*, n. sp. of *Buthus*; POCKOCK (77).

E. Persia: n. sp. and 5 n. subsp. of *Scorpiones*; BIRULA (13).

Seir: *Scorpiones*, n. subsp. of *Buthus*, *Araneæ*, n. sp. of *Lycosa*; POCKOCK (77).

Lake Urmí: n. sp. of *Galeodes*; POCKOCK (77).

Teneriffe: *Pseudoscorpiones*, n. sp. of *Garypus*; TULLGREN (121).  
 China: *Acari*, 2 n. spp. of *Eriophyes*; TROTTER (113).  
 Japan: 3 n. spp. of *Acari*; OUDEMANS (60).  
 2 n. spp. of *Holostaspis*; FOA (38).

## ii. LOCAL FAUNÆ.

Greenland: *Acari*, *Phytoptidæ*; ROSTRUP (85).  
 Vegesack: *Acari*; OUDEMANS (60), p. 121.  
 Holland: *Acari*; OUDEMANS (63).  
 Great Britain: *Araneæ*; CAMBRIDGE, O. (21).—*Araneæ*; SMITH (99).—  
 Rare *Acari*; POCKOCK (80).—*Hydrachnidæ*; SOAR (101).  
 Perthshire: *Araneæ*; EVANS (37).  
 Oban: *Hydrachnidæ* with *Acercus ligulifer* and *Torrenticolor anomala*  
 recorded for the first time in Britain; SOAR (100).  
 Lancashire: *Cnephalocotes*; CARPENTER (28), pp. 201 & 203.  
 Grantham: *Phalangida* and *Araneæ*; WOODRUFFE-PEACOCK (131),  
 p. 79.  
 New Forest: *Hydrachnidæ*; HARRIS & SOAR (43).  
 Hastings: *Araneæ*; SMITH (98).  
 Ireland: *Araneæ*; CAMBRIDGE, O. (21).  
 Germany: *Hydrachnidæ*; PIERSIG (66).  
 Bremen: *Acari*, p. 114; OUDEMANS (60).  
 Uclès (Spain): *Arachnida*; SIMON (94).  
 Polesine (Rodvigo): *Arachnida*; CASTELLI (30).  
 Italy: *Pseudoscorpiones*; SIMON (90).—*Acari* in Ants' nests; LEONARDI  
 (49).—*Acari*; TIETZE (111).  
 San Remo: *Acari*; OUDEMANS (61).  
 Malamocco (Venice): *Acari*; TIETZE (111).  
 Hungary: *Scorpiones*; CHYZER (31).—*Araneæ*; CHYZER & KULCZNSKI  
 (32).—*Pseudoscorpiones* and *Opiliones*; DADAY (35).—*Acari*; GABLONOWSKI  
 (39).—*Hydrachnidæ*; THON (106 & 107).—*Tardigrada*; DADAY (36).  
 Canary and Balearic IIs.: *Chelonethi*; TULLGREN (121).  
 Azores: *Halacaridæ*; TROUESSART (116 & 118).  
 Asia Minor: *Scorpiones*; BIRULA (14).  
 E. Persia: *Scorpiones*; BIRULA (13).  
 Lake Urmi: *Acari*; MICHAEL (57).

## Ethiopian Region.

### i. DISTRIBUTION OF THE NEW SPECIES.

Cameroons: 97 n. spp. (incl. some n. gen.) of *Araneæ*; THORELL (110).—  
 n. sp. of *Jotus*; THORELL, Bih. Svenska Ak. xxv.  
 Congo: *Araneæ*, n. sp. of *Attidæ*; SIMON (92): n. sp. of *Attidæ*; SIMON  
 (93).  
 Erythræa: *Pseudoscorpiones*, n. sp. of *Chelifer*; SIMON (91).  
 Kinani, E. Africa: *Araneæ*, n. g. of *Theraphosidæ*; POCKOCK (75).  
 Djibouti: 4 n. spp. and n. subsp. of *Halacaridæ*; TROUESSART (117).  
 Somaliland: n. sp. of *Solifugæ*; POCKOCK (71): 2 n. spp. of *Acari*,  
 5 n. spp. of *Scorpiones*, n. subsp. of *Scorpiones*; POCKOCK (78 & 79).  
 Mashonaland: 2 n. spp. of *Solifugæ*; POCKOCK (71).  
 Little Namaqualand: n. sp. of *Solifugæ*; POCKOCK (71).  
 Transvaal: *Araneæ*, n. sp. of *Attidæ*; SIMON (92).

Natal: *Araneæ*, 4 n. spp. of *Attidæ*; SIMON (92): n. sp. of *Attidæ*; SIMON (93).

Cape Colony: 2 n. spp. of *Solifugæ*, 33 n. spp. incl. 3 n. gg. of *Araneæ*; Pocock (73).

Cape of Good Hope: *Araneæ*, n. sp. of *Attidæ*; SIMON (92).

S. Africa: 6 n. spp. of *Scorpiones*; PENTHER (65).

Nossibé: *Araneæ*, 2 n. spp. of *Attidæ*; SIMON (92).

Madagascar: *Araneæ*, *Attidæ*, 9 n. spp.; SIMON (92): n. sp. of *Attidæ*; SIMON (93).

Diego-Suarez: *Araneæ*, n. sp. of *Attidæ*; SIMON (92).

Mauritius: *Araneæ*, n. sp. of *Attidæ*; SIMON (92).

Arabia: n. sp. of *Scorpiones*; Pocock (74), p. 363.

Bushire, Persian Gulf: *Scorpiones*, n. sp. of *Heterometrus*; Pocock (74), p. 364.

## ii. LOCAL FAUNÆ.

Somaliland: *Scorpiones*; Pocock (79).

## *Nearctic Region.*

### i. DISTRIBUTION OF THE NEW SPECIES.

N. America: 2 n. spp. of *Phalangida*; BANKS (10): 12 n. spp. of Spiders; BANKS (9).

Alaska: 4 n. spp. of *Araneæ*, n. sp. of *Phalangida* and n. sp. of *Acari*; BANKS (11).

U.S.A.: 5 n. spp. of *Tetranychus*, n. sp. of *Stigmæus*; BANKS (7).

Michigan Lakes: 3 n. gg. and 4 n. spp. of *Hydrachnidæ*; WOLCOTT (130).

Florida: *Pseudoscorpiones*, n. sp. of *Atemnus*; TULLGREN (120).

## ii. LOCAL FAUNÆ.

N. America: *Scorpiones*, *Pedipalpi* and *Solifugæ*; BANKS (5).

Alaska: *Arachnida*; BANKS (11).

United States: *Tetranychus* and *Stigmæus*; BANKS (7).

## *Neotropical Region.*

### i. DISTRIBUTION OF THE NEW SPECIES.

St Thomas Is.: *Araneæ*, 3 n. spp. of *Theraphosidæ*; Pocock (75).

Las Palmas: *Araneæ*, 2 n. spp.; SIMON (97).

Mexico: n. g. and 3 n. spp. of *Phalangida*; BANKS (10).—3 n. spp. of *Ctenus*, n. sp. of *Selenops*, n. sp. of *Pseudosparianthis*, 3 n. spp. of *Sparassus*, n. sp. of *Martella*, 4 n. spp. of *Lyssomanes*; CAMBRIDGE, F. (19).

Guatemala: 2 n. spp. of *Clubiona*, 4 n. spp. of *Anypheana*, n. sp. of *Aysa*, n. sp. of *Teudis*, 2 n. spp. of *Sillus* (n. g.), n. sp. of *Wulfilia*, 5 n. spp. of *Ctenus*, n. sp. of *Selenops*, n. sp. of *Sparassus*, n. sp. of *Misumenoides* (n. g.), 2 n. spp. of *Misumenops* (n. g.), 5 n. spp. of *Lyssomanes*; CAMBRIDGE, F. (19).—*Thelyphonidæ*, n. sp. of *Mastigoproctus*; Pocock (71).

Costa Rica: 2 n. spp. of *Ctenus*, 2 n. spp. of *Cobanus*; CAMBRIDGE, F. (19).

Panama: n. sp. of *Anyphaena*, n. sp. of *Aysha*, n. sp. of *Teudis*, n. sp. of *Sillus* (n. g.), n. sp. of *Celatycheus*, n. sp. of *Paratobias* (n. g.), n. sp. of *Toxus*, n. sp. of *Synageles*, n. sp. of *Lyssomanes*; CAMBRIDGE, F. (19).

S. America: *Acari*, n. sp. of *Eriophyes*; TROTTER (114).—2 n. spp. of Myrmecophilous *Acari*; WASMANN (125).

Colombia: n. sp. of *Euophrys*; PENTHER (in 11A), p. 285.

Ecuador: *Araneæ*, n. sp. of *Attidæ*; SIMON (93).—3 n. spp. of *Scorpiones*; POCOCK (72).

Brazil: *Araneæ*, 6 n. spp. of *Attidæ*; SIMON (92): 44 n. spp. of *Attidæ*; SIMON (93).

Amazons: *Araneæ*, 5 n. spp. of *Attidæ*; SIMON (92).

Quilipué: *Araneæ*, n. sp. of *Lycosa*; SIMON (97).

Bahia: n. sp. and n. subsp. of *Halacaridæ*; TROUESSART (115 & 117).

Bolivian Andes: n. g. of *Solifugæ*; POCOCK (71).

Chañarcillo: *Araneæ*, n. sp. of *Lithyphantes*; SIMON (97).

Cayenne: *Araneæ*, n. sp. of *Attidæ*; SIMON (93).

Baños: n. sp. of *Scorpiones*; POCOCK (72).

Sinche: n. sp. of *Scorpiones*; POCOCK (72).

Vera Cruz: 2 n. spp. of *Scorpiones*; POCOCK (72).

Lujan: *Araneæ*, n. sp. of *Citharuscelus*; POCOCK (69).

Inca: *Scorpiones*, n. sp. of *Bothriurus*; *Solifugæ*, n. sp. of *Cleobis*; POCOCK (69).

Peru: n. sp. of *Scorpiones*; POCOCK (72).

Peruvia: *Araneæ*, 2 n. spp. of *Attidæ*; SIMON (93).

Venezuela: *Araneæ*, *Attidæ*, 8 n. spp.; SIMON (92): 6 n. spp. of *Attidæ*; SIMON (93).

Patagonia: *Pseudoscorpiones*, n. sp. of *Chelifer*; TULLGREN (120).

Argentina: *Araneæ*, 2 n. spp. of *Attidæ*; SIMON (92).—n. sp. of *Brachio-sternus*; LONNBERG (53).

Paraguay: *Araneæ*, n. sp. of *Attidæ*; SIMON (92).

Valparaiso: *Araneæ*, n. sp. of *Meta*; SIMON (97).

Tierra del Fuego: *Acari*, n. sp. of *Rhombognathus*; TROUESSART (115 & 117).

## ii. LOCAL FAUNÆ.

Central America: *Araneæ*; CAMBRIDGE, F. (19).

Chili: *Scorpiones*; BORELLI (15).

Aconcagua Valley: *Arachnida*; POCOCK (69).

Tierra del Fuego: *Scorpiones*; LONNBERG (53).

## *Oriental and Australian Regions.*

### i. DISTRIBUTION OF THE NEW SPECIES.

Indian Ocean: n. subsp. of *Halacaridæ*; TROUESSART (115 & 117).

India: *Scorpiones*, 2 n. gg., 12 n. spp. and 15 n. subsp.; *Solifugæ*, 5 n. spp. and 2 n. subsp.; *Pedipalpi*, 3 n. spp.; *Araneæ*, 4 n. gg. and 30 n. spp.; POCOCK (68).—*Araneæ*, 3 n. spp. of *Pacilotheria*; POCOCK (76).—*Araneæ*, 2 n. spp. of *Attidæ*; SIMON (92): 4 n. spp. of *Attidæ*; SIMON (93).

W. India: n. sp. of *Solifugæ*; POCOCK (71).

Colombo: *Araneæ*, 3 n. spp. of *Attidæ*; SIMON (92).

Kandy: *Araneæ*, 2 n. spp. of *Attidæ*; SIMON (92).

Yunnan: *Thelyphonidæ*, n. sp. of *Hypoconus*; POCOCK (71).

Singapore: *Araneæ*, n. sp. of *Attidæ*; SIMON (92): n. sp. of *Attidæ*; SIMON (93).



Siam: *Thelyphonidæ*, n. sp. of *Thelyphonus*, n. sp. of *Tyropeltis*; Pocock (71).

Cochin China: *Acari*, 2 n. spp. of *Halacarus*; TROUSSERT (115 & 117).

Java: *Araneæ*, 2 n. spp. of *Attidæ*; SIMON (92): 2 n. spp. of *Attidæ*; SIMON (93).

Borneo: n. g. of *Attidæ*; WARBURTON (124).

Celebes: n. sp. of *Thelyphonidæ*; TARNANI (104).

Philippines: *Araneæ*, n. sp. of *Attidæ*; SIMON (92).

Manila: *Araneæ*, 2 n. spp. of *Attidæ*; SIMON (92).

Taprobane: *Araneæ*, n. sp. of *Attidæ*; SIMON (92): 3 n. spp. of *Attidæ*; SIMON (93).

Sandwich Islands: *Arachnida*, incl. many n. genera and n. spp.; SIMON (89).

Christmas Is.: *Pseudoscorpiones*, n. sp. of *Chelifer*; *Araneæ*, n. subsp. and 2 n. spp.; Pocock (70).

N. Guinea: *Araneæ*, n. sp. of *Attidæ*; SIMON (93).

Australia: *Araneæ*, 4 n. spp. of *Attidæ*; SIMON (92).

N. S. Wales: 3 n. spp. of *Araneæ*, n. var. of *Dicrostichus furcatus*; RAINBOW (82).—*Araneæ*, 2 n. spp. (incl. n. g.) of *Thomisidæ*; RAINBOW (83).

Victoria: 6 n. gg. and 21 n. spp. of *Araneæ*; HOGG (45).

## ii. LOCAL FAUNÆ.

British India: *Arachnida* (except *Acari*); Pocock (68).

Australia: *Acari*; ANON (1).

Victoria: *Araneæ*; HOGG (45).

Christmas Island: *Arachnida*; Pocock (70).

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## CORRECTION OF RECORD FOR 1897.

On p. 12 in *Arachnida* of Vol. xxxiv, in the Geographical Section 46 n. spp. and 3 n. gg. from the Island of St Vincent are wrongly placed in the Palearctic Region, they should come under the Neotropical Region, as also should the reference to SIMON (124). The Spiders described in this paper come from Antillean—not from Atlantic—St Vincent.

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## IV. SYSTEMATIC.

### ARACHNIDA.

[The following papers deal with *Arachnida* generally: BANKS (6, 11), CASTELLI (30), Pocock (68, 70, 73, 77, 78), SHERBORN (87), SIMON (89).]

### SCORPIONES.

[Consult, in addition to papers mentioned under "*Arachnida* generally," the following: BANKS (5), BIRULA (12, 13, 14), BORELLI (15), CHYZER (31), LONNBERG (53), PENTHER (65), PIERSIG (66, 67), Pocock (69, 72, 74, 79).]

*Bothriurus chilensis*, p. 62, BORELLI, Revist. chilena iv.

*B. alticola*, Inca, p. 357, fig. 1, Pocock, in FITZGERALD'S The Highest Andes, n. sp.

*Brachistosternus weijenberghi*, p. 61, BORELLI, Revist. chilena iv.

- Butheolus*, g. def. and key to spp., p. 28, *melanurus*, p. 28, *pallidus*, *flavescens*, p. 30, *bicolor*, p. 31, Pocock, Faun. Brit. Ind. Arach. ; *B. melanurus*, p. 373, var. *dentatus*, nov., p. 375, BIRULA, Bull. Ac. St. Petersb. xii.
- B. melanurus persa*, E. Persia, p. 374, BIRULA, t. c., n. subsp.
- Buthidae*, fam. def. p. 12, key to genera of sub-families, pp. 12 & 42, Pocock, Faun. Brit. Ind. Arach.
- Buthus odonturus*, p. 357, *eupeus*, p. 358, *eupeus thersites*, p. 359, *eupeus afghanus*, p. 360, *caucasicus*, p. 367, BIRULA, Bull. Ac. St. Petersb. xii ; *B. gibbosus*, Asia Minor, p. 133, BIRULA, Horæ Soc. ent. Ross. xxxiii ; *B. g.* def. p. 13, key to Indian spp. p. 14, *australis*, p. 15, subsp. *finitimus*, p. 16, *doriæ* subsp. *odonturus*, p. 16, *caucasicus* subsp. *persicus*, p. 19, *atriostriatus*, *acute-carinatus*, p. 20, *alticola*, p. 21, subsp. *penjabensis*, p. 22, *tumulus*, p. 23, subsp. p. 24, *rugiscutis*, p. 26, *pachurus*, p. 27, Pocock, Faun. Brit. Ind. Arach.
- B. pachysoma*, E. Persia, p. 370, BIRULA, Bull. Ac. St. Petersb. xii ; *B. vesiculatus*, Astracan, Persia, p. 405, pl. xxvi, fig. 4, Pocock, J. Linn. Soc. xxvii ; *B. calviceps*, N. W. Somaliland, p. 54, pl. iv, figg. 3 & 3a, Pocock, P. Z. S. 1900 ; *B. macmahoni*, N. Baluchistan, p. 18, *nigrifrons*, N. Baluchistan, p. 22, *hendersoni*, Madras, p. 26, Pocock, Faun. Brit. Ind. Arach. : n. spp.
- B. finitimus* subsp. *baluchicus*, N. Baluchistan, p. 16, *acute-carinatus* subsp. *rugulosus*, Hyderabad, p. 21, *tumulus* subsp. *concanensis*, Ratnigiri, *sindicus*, Valley of Lower Indus, *gujaratensis*, Kharaghora, *gangeticus*, area of Upper Ganges, p. 25, *rugiscutis* subsp. *nigritis*, S. Deccan, p. 27, Pocock, t. c. ; *B. caucasicus* subsp. *persicus*, Seir, p. 404, Pocock, J. Linn. Soc. xxvii ; *B. occitanus berberensis*, Somaliland, p. 56, *occitanus zeylensis*, p. 56, Pocock, P. Z. S. 1900 ; *B. eupeus kirmanensis*, E. Persia, p. 364, *zarudnyi gracilis*, E. Persia, p. 368, BIRULA, Bull. Ac. St. Petersb. xii : n. subsp.
- Calchas nordmanni*, S. W. Transcaucasia, p. 252, descr., BIRULA, Annuaire Mus. St. Petersb. v.
- Centromachetes pococki*, Chili, p. 64, BORELLI, Revist. chilena iv.
- Chactas simonsi*, Rio Amboke in Ecuador, p. 471, *lojanus*, Loja in Ecuador, p. 472, Pocock, Ann. Nat. Hist. v, n. spp.
- Chærilidae*, fam. def., p. 53, Pocock, Faun. Brit. Ind. Arach.
- Chærilus*, g. def. and key to spp., p. 53, *margaritatus*, *insignus*, p. 58, *tricotatus*, p. 59, *gemmifer*, p. 60, *pictus*, p. 61, *ceylonensis*, *birmanicus*, p. 62, *truncatus*, p. 63, Pocock, Faun. Brit. Ind. Arach.
- C. granosus*, W. Himalayas, p. 56, *anthracinus*, W. Himalayas, p. 57, Pocock, t. c., n. sp.
- C. anthracinus rufescens*, W. Himalayas, p. 59, Pocock, t. c., n. subsp.
- Charmus*, g. def., p. 31, *laneus*, p. 32, Pocock, t. c.
- Chiromachetes*, g. def., p. 77, *fergusoni*, p. 78, Pocock, t. c.
- Euscorpium ciliciensis*, Asia Minor, p. 136, BIRULA, Horæ Soc. ent. Ross. xxxiii, n. sp.
- Hadogenes austro-africanus*, Matabeleland, p. 161, *betschuanicus*, British Bechuanaland, p. 162, PENTHER, Ann. Hofmus. Wien xv, n. spp.
- Hadruroides lunatus*, p. 474, *charcasus*, *maculatus*, p. 475, notes, Pocock, Ann. Nat. Hist. v.
- H. carinatus*, Baños, p. 475, *leopardus*, Eten, Peru, p. 477, var. *vittatus* nov. (mountain form), p. 477, Pocock, t. c., n. spp.
- Hemibuthus*, n. g. def. for (*Archisometrus*) *crassimanus*, p. 34, Pocock, Faun. Brit. Ind. Arach.
- Hemiscorpius lepturus*, Baghdad, p. 77, Pocock, t. c.
- Heterometrus palmatus*, specimens from Asia Minor described, p. 134, BIRULA, Horæ Soc. ent. Ross. xxxiii ; *H.* table of known spp. p. 365, *flavus*, *rufus*, *fuscus*, *minor*, omission from "Das Tierreich," p. 365, Pocock, Ann. Nat. Hist. vi.

- H. arabicus*, Arabia, p. 363, *townsendi*, Bushire, Persian Gulf, p. 364, t. c., n. spp.
- Hormurus*, g. def. p. 78, *australasiæ*, p. 79, *nigripes*, p. 80, Pocock, Faun. Brit. Ind. Arach.
- Iomachus*, g. def. and key to spp., *læviceps*, p. 81, *punctulatus*, p. 83, Pocock, t. c.
- I. læviceps* var. *malabarensis*, Mangalore, p. 82, Pocock, t. c., n. subsp.
- I. nitidus*, S. India, p. 83, Pocock, t. c., n. sp.
- Ischnurida*, def. and key to genera, p. 76, Pocock, t. c.
- Isometrus*, g. def. and key to spp., p. 44, *europæus*, p. 46, *thurstoni*, p. 47, *assamensis*, *thwaitesi*, p. 48, *basilicus*, p. 49, *brachycentrus*, p. 50, *acanthurus*, p. 51, *rigidulus*, p. 52, Pocock, t. c.
- I. vittatus*, Madras, p. 50, Pocock, t. c., n. sp.
- Iurus dufourei*, Asia Minor, notes, p. 135, BIRULA, Horæ Soc. ent. Ross. xxxiii.
- Lychas*, g. def. and key to spp., p. 35, *mucronatus*, p. 36, *scutillus*, p. 37, *scaber*, *nigristernis*, p. 38, *rugosus*, p. 39, *tricarinatus*, *hendersoni*, p. 40, *shoplandi*, *lævifrons*, p. 41, *fee*, p. 42, Pocock, Faun. Brit. Ind. Arach.
- Megaconus segmentatus*, Atoyac in Vera Cruz, p. 470, Pocock, Ann. Nat. Hist. v, n. sp.
- Opisthophthalmus betschuanicus*, British Bechuanaland, p. 160, PENTHER, Ann. Hofmus. Wien xv, n. sp.
- Palamæus*, g. def. and key to spp., p. 84, *swammerdami*, p. 86, subsp. *ludiceps*, p. 87, *fulvipes*, p. 87, *wroughtoni*, p. 88, *latimanus*, *gravimanus*, p. 90, *liurus*, p. 91, *xanthopus*, p. 92, *scaber*, p. 93, *bengalensis*, *phipsoni*, p. 94, *indus*, p. 96, *cæsar*, *longimanus*, p. 97, Pocock, Faun. Brit. Ind. Arach.
- P. oatesi*, nom. nov. for *P. spinifer*, def., p. 98, Pocock, t. c.
- P. barberi*, S. India, p. 95, *serratus*, Ceylon, p. 97, Pocock, t. c., n. spp.
- P. swammerdami flavimanus*, Coonoor, p. 87, *fulvipes madraspatensis*, Madras, p. 88, *fulvipes bombayensis*, Bombay, p. 89, *scaber kanarensis*, Kanara, p. 93, *phipsoni collinus*, Nilgiri Hills, p. 95, Pocock, t. c., n. subsp.
- Pandinus pugillator*, N. W. Somaliland, p. 52, pl. iv, figg. 1 & 1a, *peeli*, N. W. Somaliland, p. 52, pl. iv, fig. 2, *hawkeri*, Somaliland, p. 60, *militaris*, Somaliland, p. 61, Pocock, P. Z. S. 1900, n. spp.
- Parabuthus obscurus*, S. Africa, p. 154, *pachysoba*, British Bechuanaland, p. 156, PENTHER, Ann. Hofmus. Wien xv, n. spp.
- Phoniocercus pictus*, p. 63, BORELLI, Revist. chilena iv.
- Plesiobuthus*, n. g. of *Buthidæ* def., p. 43, for *paradoxus*, N. Baluchistan, p. 44, Pocock, Faun. Brit. Ind. Arach. n. sp.
- Plesiochactas*, n. g. of *Chatidæ*, def. p. 470, for *dugesi*, Atoyac in Vera Cruz, p. 470, Pocock, Ann. Nat. Hist. v.
- Prionurus crassicauda*, subsp. *orientalis*, E. Persia, p. 355, BIRULA, Bull. Ac. St. Petersb. xii, n. subsp.
- P. finitimus*, E. Persia, p. 356, BIRULA, t. c.
- Scorpionidæ*, fam. def., p. 84, Pocock, Faun. Brit. Ind. Arach.
- Scorpiops*, g. def., p. 64, key to spp., p. 65, *hardwicki*, p. 66, *crassimanus*, p. 68, *leptochirus*, p. 69, *petersi*, *montanus*, p. 70, subsp. *tenuicauda*, p. 72, *longimanus*, p. 72, *binghamii*, *anthracinus*, *lindstroemii*, p. 74, *affinis*, p. 75, Pocock, Faun. Brit. Ind. Arach.
- S. montanus* subsp. *satarensis*, Satara, p. 71, Pocock, t. c., n. subsp.
- S. asthenurus*, Kalimpong, p. 73, *insculptus*, W. Himalayas, p. 68, Pocock, t. c., n. spp.
- Stenochirus*, g. def., p. 32, *politus*, *sarasinorum*, p. 33, Pocock, t. c.
- Teuthraustes oculatus*, Sinche, p. 473, Pocock, Ann. Nat. Hist. v, n. sp.
- Tityus simonsi*, Loja, p. 469, Pocock, t. c., n. sp.

- Uroplectes jutrenkai*, E. Transvaal, p. 157, PENTHER, Ann. Hofmus. Wien xv, n. sp.  
*Vejoidea*, fam. def., p. 64, Pocock, Faun. Brit. Ind. Arach.

## PEDIPALPI.

[See papers under "Arachnida," p. 14, and the following: ANON (2), BANKS (5, 10), Pocock (71), TARNANI (104), WHEELER (127).]

- Catagæus*, g. def., *pusillus*, p. 130, Pocock, Faun. Brit. Ind. Arach.  
*Hypoctonus*, g. def. and key to Indian spp., p. 111, *binghami*, *wood-masoni*, p. 113, *saxatilis*, *sylvaticus*, p. 115, *rangunensis*, *formosus*, p. 116, subsp. *insularis*, p. 117, *andersoni*, p. 117, Pocock, t. c.  
*H. oatesii*, Sylhet, p. 112, Pocock, t. c.; *H. granosus*, Yunnan, ♀ descr., p. 294, fig. 4, Pocock, Ann. Nat. Hist. v : n. spp.  
*Labochirus tauricornis*, misnamed *cervinus* in J. Bombay Soc. xii, p. 745, p. 295, Pocock, t. c.; *L. g.* def. and key to Indian spp., p. 107, *proboscideus*, p. 108, *tauricornis*, p. 109, *cervinus*, p. 110, Pocock, Faun. Brit. Ind. Arach.  
*Mastigoproctus liochirus*, Guatemala, p. 299, Pocock, Ann. Nat. Hist. v, n. sp.  
*Phrynichus*, g. def., p. 125, *lunatus*, p. 126, *phipsoni*, p. 127, *pusillus*, p. 128, Pocock, Faun. Brit. Ind. Arach.  
*Schizomus*, g. def., p. 119, *crassicaudatus*, p. 120, Pocock, t. c.  
*Stygophrynus*, g. def., p. 129, *cavernicola*, p. 130, Pocock, t. c.  
*Thelyphonus*, g. def. and key to spp., p. 103, *sepiaris*, p. 104, subsp. *indicus* and *muricola*, p. 105, *schnehenagenii*, p. 105, Pocock, t. c.  
*T. cristatus*, Bengal, p. 105, Pocock, t. c., n. sp.  
*T. wayi*, Battambang in Siam, ♀ descr., p. 295, figg. 3-3b, Pocock, Ann. Nat. Hist. v; *T. pococki*, Celebes, p. 482, TARNANI, Zool. Anz. xxiii : n. spp.  
*Trithyreus*, g. def. and key to Indian spp., p. 121, *grassii*, *cambridgii*, p. 122, Pocock, Faun. Brit. Ind. Arach.  
*T. suboculatus*, Ceylon, p. 122, Pocock, t. c., n. sp.  
*Typopeltis stimpsoni*, figg. 2 & 2a, p. 296, Pocock, Ann. Nat. Hist. v.  
*T. dalyi*, Lacan, Siam, p. 397, figg. 1-1c, Pocock, t. c., n. sp.  
*T. kasnakovi*, Kasnakow, p. 481, TARNANI, Zool. Anz. xxiii, n. sp.  
*Uroproctus assamensis*, p. 106, Pocock, Faun. Brit. Ind. Arach.

## ARANEÆ.

[See papers under "Arachnida" and the following: BANKS (9), BÖSENBERG (16), CAMBRIDGE, F. (19), CAMBRIDGE, O. (20, 21), CARPENTER (28), CASTELLI (29), CHYZER & KULCZNSKI (32), EVANS (37), VAN HASSELT (44), HOGG (45), LAMY (47), LONGLEY (52), Pocock (69, 75, 76), RAINBOW (82, 83), ROBERTSON (84), SARGENT (86), SIMON (92-97), SMITH (98, 99), STRAND (102, 103), THORELL (110), TREGGAR (112), WAGNER (122), WALLACE (123), WARBURTON (124), WESTBERG (126), WHITE (128), WOODRUFFE-PEACOCK (131).]

- Acanthodon curvipes*, Cameroons, p. 4, THORELL, Bih. Svenska Ak. xxv;  
*A. constructor*, Chingleput, *fortis*, India, p. 163, *fossor*, India, p. 164, Pocock, Faun. Brit. Ind. Arach. : n. spp.  
*A.*, g. def. and key to Indian spp., p. 161, *opifex*, p. 162, *designatus*, p. 164, Pocock, t. c.  
*Acatyma*, g. def., *cryptica*, p. 166, Pocock, t. c.  
*Acragyas*, n. g. of *Attidæ* def. for *longimanus*, p. 37, *castaneiceps*, p. 39, *phasianinus*, *miniaceus*, p. 40, *erythræus*, *humilis*, p. 41, all from Brazil,



- leucaspis*, Venezuela, p. 38, *procalvus*, Peruvia, p. 39, SIMON, Ann. Soc. ent. France lxi, n. spp.
- Aerosoma maculata*, Arizona, p. 100, BANKS, Canad. Ent. xxxii, n. sp.
- A. bimucronatum*, pl. xxxvi, figg. 14-14b, CAMBRIDGE, O., Arach. Aran. i in Biol. Centr.-Amer.
- Adrastidia*, n. g. of *Philodromidae*, defined, p. 503, *stigmatica*, Hawaii, ♀ and var. descr., p. 503, pl. xvii, fig. 10, *nebulosa*, Hawaii, ♀ descr., p. 503, *longula*, Maui, ♀ descr., p. 504, pl. xvii, fig. 9, SIMON, Fauna Hawaiiensis ii, Pt. v, n. spp.
- Agelena longipes*, Lancashire, ♀ descr. and figs., p. 199, CARPENTER, Ann. Nat. Hist., Ser. vii, vol. vi; *A. ocellata*, Table Mt., p. 326, POCOCK, t. c. : n. spp.
- A. nævia*, p. 397, pl. x, SARGENT, P. Ac. Philad. 1900.
- Agelista*, n. g. of *Attidae*, def., for *andina*, Argentina, p. 383, SIMON, Ann. Soc. ent. Belgique xlv, n. spp.
- Amamra clivosa*, pl. xxxvi, figg. 1-2f, CAMBRIDGE, O., Arach. Aran. i in Biol. Centr.-Amer.
- Amaurobius pilosus*, Macedon, Victoria, p. 80, pl. xiii, fig. 1, HOGG, P. Soc. Victoria xiii, n. sp.
- Ametochilus*, g. def., *fossor*, Tavoy, p. 168, POCOCK, Faun. Brit. Ind. Arach.
- A. atriceps*, Tenasserim, p. 169, POCOCK, t. c., n. sp.
- Ammonius*, n. g. of *Theraphosidae*, def., p. 11, for *pupulus*, Cameroons, p. 11, THORELL, Bih. Svenska Ak. xxv, n. sp.
- Amphidraus*, n. g. of *Attidae* def. for *auriga*, Bolivia, *nigritarsis*, Venezuela, p. 60, SIMON, Ann. Soc. ent. France lxi, n. spp.
- Amycus pertyi*, Peruvia, *ectypus*, p. 34, *rufifrons*, Brazil, p. 35, *equulus*, *annulatus*, *flavicomis*, Brazil, p. 36, SIMON, t. c., n. spp.
- Anaurus*, n. g. of *Attidae*, def., p. 382, *flavimanus*, Brazil, p. 382, SIMON, Ann. Soc. ent. Belgique xlv, n. spp.
- Anyphaena proba*, figured, pl. vii, figg. 3 & 3a, *gibba*, pl. vii, figg. 4 & 5, *gibbosa*, pl. vii, figg. 6 & 7, *subgibba*, pl. vii, fig. 8, *judicata*, pl. vii, fig. 9, *excepta*, pl. vii, fig. 10, *simplex*, pl. vii, figg. 11 & 12, pp. 95 & 96, CAMBRIDGE, Arach. Aran. ii in Biol. Centr.-Amer.
- A. stylifer*, ♂, Panama, p. 97, pl. vii, figg. 13 & 13a, *trifida*, ♂, Guatemala, p. 97, pl. vii, figg. 14 & 14a, *plana*, ♂, Panama, p. 97, pl. vii, figg. 15-15b, *tuberosa*, ♂, Guatemala, p. 97, pl. vii, figg. 16 & 16a, *scopolata*, ♂, Guatemala, p. 98, pl. vii, figg. 17 & 17a, CAMBRIDGE, t. c., n. spp.
- Apollophanes punctipes*, p. 132, pl. ix, figg. 19 & 20, *maculatipes*, p. 132, pl. ix, figg. 21-21b, CAMBRIDGE, Arach. Aran. ii in Biol. Centr.-Amer.
- Apostenus bertkawi*, p. 118, BÖSENBERG, Verh. Ver. Rheinland lvi, n. sp.
- Aranea basilissa*, p. 44, *bi-oculata*, p. 44, *septem-tuberculata*, p. 45, *perforata*, *crassicaudex*, p. 46, *sub-bituberculata*, p. 47, *sanguipes*, p. 48, *varians*, p. 49, *rapta*, p. 51, *nigrita*, p. 52, *accentuata*, p. 53, *turbinata*, p. 54, *napiiformis*, p. 55, *decorata*, p. 56, *luteola*, p. 57, *apicalis*, p. 58, Cameroons, THORELL, Bih. Svenska Ak. xxv, n. spp.
- Araneus*, g. def. and key to Indian spp., p. 223, *laglaizei*, p. 224, *unicolor*, *dehaanii*, p. 225, *moluccensis*, *fea*, *cicatrosus*, *citricola*, p. 226, *exanthematicus*, p. 227, *nauticus*, *rumpfi*, p. 228, POCOCK, Faun. Brit. Ind. Arach.
- A. bilunifer*, S. India, p. 227, POCOCK, t. c.; *A. memorii*, p. 99, pl. xv, fig. 1, *scutigerens*, p. 100, pl. xv, fig. 2, both Victoria, HOGG, P. Soc. Victoria xiii; *A. mensamontis*, Table Mountain, *græmii*, Grahamstown, p. 324, POCOCK, Ann. Nat. Hist. vi; *A. parvulus*, Guildford near Sydney, p. 489, pl. xxiv, figg. 3-3c, *singularis*, Bungendore, N. S. Wales, p. 490, pl. xxiv, figg. 4-4b, RAINBOW, P. Linn. Soc. N. S. Wales xxv; *A. emmae*, Hawaii, ♀ and varieties descr., p. 482, pl. xvi, fig. 6, *kapiolanix*, Hawaii, ♀ descr., p. 483, pl. xvi, fig. 7, SIMON, Fauna Hawaiiensis ii, Pt. v : n. spp.

- Argiope*, g. def. and key to Indian spp., *arcuata*, p. 220, *lobata*, *pulchella*, p. 221, *undulata*, *anasuja*, *taprobanica*, p. 222, *œmula*, *catenulata*, p. 223, Pocock, Faun. Brit. Ind. Arach.; *A. reinwardti*, notes and fig., p. 159, pl. xvi, fig. 2, Pocock, in ANDREWS' "Christmas Island"; *A. cophinaria*, growth and development of instincts, p. 397, pl. ix, SARGENT, P. Ac. Philad. 1900; *A. avara* and n. subsp. descr., p. 476, SIMON, Fauna Hawaiiensis ii, Pt. v.
- A. trifasciata*, descr., p. 38, THORELL, Bih. Svenska Ak. xxv.
- Argoctenus pectinatus*, Victoria, p. 106, pl. xvi, fig. 1, HOGG, P. Soc. Victoria xiii, n. sp.
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## TARDIGRADA.

[See DADAY (36).]

# XII. MYRIOPODA AND PROTO- TRACHEATA.

BY

ALBERT WILLIAM BROWN, B.A., F.L.S.

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## INTRODUCTION.

THE Record of Myriopoda for 1900 shows very little change from its predecessors. The group, perhaps by reason of its difficulty, does not attract many specialists, though increased study of it is much to be desired.

The largest paper of the year is the second part of ATTEMPS' "System der Polydesmiden." VERHOEFF continues his papers on Palæarctic Myriopoda and a number of papers have been published by H. W. BRÖLEMANN. Beyond these there is nothing calling for special mention in the Introduction.

The Recorder, following the plan he has adopted for some years in this and other Arthropod Records, has arranged all the genera of Diplopoda

alphabetically instead of under their respective families. It seems impossible to arrange the genera in any other way so that it may be of use to systematists, and the most desirable method of arrangement is that which avoids the region of controversy altogether.

The Record of Prototracheata is the largest and in some ways the most important yet compiled by the Recorder.

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33. —. Über *Schendyla* und *Pectinunguis*. T. c. pp. 483–486.
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Structure of the Eye of *Scutigera*, p. 204, HEMENWAY (18).

Intermediate males of *Diplopoda*, p. 29, VERHOEFF (31); Intermediate males in Myriopoda, BRÖLEMANN (16); Criticism of Verhoeff's papers on intermediate males in the Diplopoda, BRÖLEMANN (12).

Active principle of the poison of *Iulus terrestris*, BÉHAL & PHISALIX (6).

Cutaneous secretion of *Iulus terrestris*, PHISALIX (21).

Emission of a brownish fluid by a sp. of *Iulus* when irritated, p. 353, STEAD, Zoologist lviii.

Offensive secretion of *Trigoniulus goëssii*, p. 183, BRÖLEMANN (15).

List of genera and spp. of *Polydesmoidea*, pp. 396-415; ATTEMS, Denk. Ak. Wien lxviii.

Distribution of *Glomeris*; ATTEMS (2).

## III. DISTRIBUTION.

## i. LOCAL FAUNÆ.

Myriopoda of Caves: ABSOLON (1).

Palæarctic: *Myriopoda*, VERHOEFF (29 & 30).

Scotland: *Myriopoda*, p. 127, EVANS, Ann. Scott. Nat. Hist. ix.

France: *Myriopoda*, BRÖLEMANN (11).

Spain (Cuenca): *Myriopoda*, BRÖLEMANN (10).

Switzerland: *Myriopoda*, ROTHENBÜHLER (24).

Canary Is.: *Myriopoda*, BRÖLEMANN (14).

Siebenbürgen: *Diplopoda*, VERHOEFF (28).

Hungary: *Myriopoda*, DADAY (17).

## ii. DISTRIBUTION OF THE NEW SPECIES.

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Europe: 3 n. spp. of cavernicolous *Myriopoda*, BRÖLEMANN (8).

England: n. sp. of *Iulus*, p. 206, POCOCK (23).

France: n. sp. of *Blaniulus*, p. 199, n. sp. of *Ceratosoma*, p. 200, BRÖLEMANN (11).

Cuenca: n. sp. of *Polydesmus*, BRÖLEMANN (10).

Switzerland: 2 n. spp. (incl. n. g.) and 3 n. subsp. of *Myriopoda*, ROTHENBÜHLER (24).

Austria: n. subsp. of *Mastigophorophyllum*, p. 314, ATTEMS (2).

San Remo: n. sp. of *Iulus*, p. 521, LATZEL (19).

Corsica: n. sp. of *Craspedosoma*, p. 521, LATZEL (19).

Roumania: n. sp. of *Schendyla*, p. 485, VERHOEFF (33).

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Seir: n. sp. of *Lithobius*, POCOCK (22).

Japan: n. sp. of *Fontaria*, p. 260, ATTEMS (3).

Canary Is.: n. sp. of *Geophilus*, p. 438, 5 n. spp. of *Pachyiulus*, pp. 442-449, BRÖLEMANN (14).

*Ethiopian, Oriental, and Australasian Regions.*

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 E. Africa : n. sp. of *Eurydesmus*, p. 269, n. sp. of *Dodekaporus*, n. g., p. 275, 2 n. spp. of *Oxydesmus*, pp. 293–295, ATTEMS (3).  
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 Gaboon : n. sp. of *Oxydesmus*, p. 299, ATTEMS (3).  
 Kribi : n. sp. of *Oxydesmus*, p. 298, ATTEMS (3).  
 Liberia : n. sp. of *Oxydesmus*, p. 295, ATTEMS (3).  
 Malange : n. sp. of *Oxydesmus*, p. 294, ATTEMS (3).  
 Saida : n. sp. of *Schendyla*, p. 485, VERHOEFF (33).  
 Sanger : n. sp. of *Platyrrhacus*, p. 331, ATTEMS (3).  
 Satanga : n. sp. of *Platyrrhacus*, p. 333, ATTEMS (3).  
 Tanganyika : n. sp. of *Oxydesmus*, p. 300, ATTEMS (3).  
 Togo : n. sp. of *Oxydesmus*, p. 297, ATTEMS (3).  
 Zanzibar : n. sp. of *Eurydesmus*, p. 268, ATTEMS (3).  
 E. Sumatra : n. sp. of *Platyrrhacus*, p. 334, ATTEMS (3).  
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*Nearctic and Neotropical Regions.*

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 Illinois : n. sp. of *Fontaria*, p. 312, ATTEMS (3).  
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 Panama : n. sp. of *Rhinocricus*, p. 107, BRÖLEMANN (13).  
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 Costa Rica : n. sp. of *Euryurus*, p. 279, ATTEMS (3).  
 Colombia : n. sp. of *Platyrrhacus*, p. 121, n. sp. of *Leptodesmus*, p. 116, BRÖLEMANN (13); n. sp. of *Spirostreptus*, ATTEMS in (5), p. 283.  
 Bogota : n. subsp. of *Aphelidesmus*, p. 122, BRÖLEMANN (13).  
 Brazil : n. sp. of *Cryptodesmus*, p. 364, 2 n. spp. of *Katantodesmus*, pp. 385 & 386, ATTEMS (3); n. sp. of *Odontotropis*, p. 65, n. sp. of *Trigonius*, p. 68, BRÖLEMANN (9).  
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 Argentina : n. g. of *Polyxenidae*, SILVESTRI (26).  
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*Linotenia maritima*, occurrence in Somerset, p. 484, Pocock, Zoologist lviii.

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*Lithobius guatemalæ*, Guatemala, descr., p. 95, BRÖLEMANN, Mem. Soc. zool. France xiii; *L. persicus*, Seir, p. 399, POCKOCK, J. Linn. Soc. xxvii, n. spp.

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(Vacant.)

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*Chordeuma silvestre*, descr., p. 376, pl. figg. 1-5, VERHOEFF, Arch. Naturg. lxvi.

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## XIII. INSECTA.

By D. SHARP.

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## INTRODUCTION.

THE literature of Insecta recorded this year is very extensive, the number of titles in our list being 1431 against 1241 last year, and 1346 in 1898—the previous maximum. In addition a large number of faunistic memoirs and shorter notes have been placed in the subject-indices, though not in the titles, so that somewhere between 1800 and 2000 works, papers and notes bearing on Insecta are recorded this year.

SJÖSTEDT (1221) has produced his monograph of African Termitidæ: it includes 82 species, a number nearly equal to that known from all the world at the date of HAGEN's monograph. The first Insect-part of das Tierreich, BORMANS & KRAUSS (153) has appeared, and HAMPSON (544) has completed the second volume of the British Museum Descriptive Catalogue of Moths. MARCHAL (852) has described a new aquatic Hymenopteron, SKORIKOW (1227) a *Japyx* an inch and a half long. SPEISER's revisions of some of the curious families of *Diptera Pupiparæ* are of considerable interest and Miss RICARDO's revision of *Pangoninae* appears to be a valuable contribution to our knowledge of exotic *Diptera*—a branch of Entomology which is also redeemed from neglect by the work of STEIN (1276–1280) and others.

ASHMEAD has continued his work on *Hymenoptera*. His paper on *Ichneumonidae* (38) will no doubt much facilitate the study of that enormous and extensive group. He considers that a million species of parasitic *Hymenoptera* are at present in existence and that about 10,000 of these have been described. His work on W. Indian *Hymenoptera* (40) is also of considerable importance; he catalogues about 1300 species; and as he also mentions in their proper positions the names of the families that are not represented, it is possible for one who is not a completely informed Hymenopterist to form an opinion as to the fauna.

PAGENSTECHE's account (974, 975) of the *Lepidoptera* of the Bismarck Archipelago, though certainly very far indeed from exhaustive, is one of the best we have for any group of tropical islands. PIEPERS & SNELLEN (1038) have published the first part of what promises to be an important work on the *Lepidoptera* of Java. HUTTON continues his papers on the entomology of New Zealand, dealing this time with the *Tipulidæ*, or Craneflies, of which he lists 44 species, more than half of them new (631).

The Harriman expedition to Alaska has resulted in an important increase in our knowledge of the entomology of that region. The series of papers hitherto published is given under KINCAID (710). Considerable progress has been made with the *Biologia Centrali-Americana*, GODMAN (511); and PERKINS (990) has done a good deal at the Hawaiian *Coleoptera*.

WASMANN's (1377) paper makes us acquainted with a considerable number of extraordinary forms of *Coleoptera* living with migratory ants in S. America and Africa.

One of the most important papers of the year is that by PETERSEN on the morphology and classification of *Lepidoptera*. He considers and generalises the various anatomical points with a view to basing a classification on the whole of them.

Prof. LAMEERE's volume (794) illustrates his views as to the classification of Insects, and gives keys for determining the species of several Orders. MEIJERE's paper on the larva of *Lonchoptera* has an important bearing on the classification of *Diptera*.

BORDAS makes several contributions to anatomy; his work (144) on the reproductive organs of *Coleoptera* reviews 200 species, exhibiting great



variety, but capable of being classed in two or three great divisions. His paper on *Brachytrupes* makes us acquainted with a very remarkable arrangement of Malpighian tubes (149, 150).

ZANDER (1422) has continued his study of the sexual structures of *Hymenoptera* in a paper that will no doubt receive serious consideration from those who are establishing a terminology for these parts.

MIALL & HAMMOND's work on the structure and life-history of *Chironomus* gives a large amount of valuable information in a clear and concise form. In Embryology we may point to KNOWER's Termitid paper (738) and HEYMONS' remarks thereon.

From FOLSOM we have an important work on the morphology of the head and its appendages, giving special attention to the hypopharynx and treating of the relations between *Crustacea* and *Insecta*.

NEEDHAM (936) gives an extremely interesting sketch of the metamorphosis of a *Coleopteron*, showing that a more extensive study in this Order is likely to reveal facts of great importance as regards the growth of wings and legs and the phenomena of phagocytosis.

MERCER (896) has given the results of his investigation of the development of the wings of *Lepidoptera*, somewhat extending the discoveries of GONIN and others.

Great interest continues to be displayed in the physiology of metamorphosis, and numerous papers and discussions of the subject are recorded (see subject-index). BERLESE gives an important paper (103), and in (104) he impugns the destructive functions of the phagocytes.

PRATT (1054) has traced the origin of the imaginal discs in *Melophagus* to an early period of the embryonic development.

TORNIER (1325) has an interesting, if not very conclusive, study of malformations in *Coleoptera*. The determination of sex in parthogenetic and other forms has been discussed at considerable length by CUÉNOT (304).

GAHAN's review (478) of the stridulating organs of *Coleoptera* is of considerable interest.

FOREL (434) reproduces his former accounts of experiments as to Senses and Instinct, and adds a disquisition on the subject of Insect-psychology in general. WHEELER's study (1407, 8) of the habits and larvæ of *Ponerine* will give great pleasure to ethologists. Miss ADELE FIELD describes a simple and efficient form of artificial nest for the observation of Ants and other Insects.

The first part of KIEFFER's work on *Cecidomyiidae* (704) forms an important biological treatise, and gives much information as to galls. FABRE's new (385) volume does not, as might be expected, relate to *Hymenoptera*, but gives much information—some of it new—as to oviposition of *Curculionidae*, the making of cases by *Lepidoptera* and *Coleoptera*, the "assembling" of *Lepidoptera*, etc. BOUVIER (165, 6) and MARCHAL (853) have made valuable notes on the Instinct of fossorial *Hymenoptera*.

In the economic department REUTER's study (1103) of the causes bringing about "white-earedness" in corn and grasses appears to be important, and HUBER's bibliography of clinical entomology (618) is arranged according to species and will therefore prove useful to the entomologist, who often finds it very difficult to get information as to the collateral aspects of his subject.

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6. —. II. Aufsatz. T. c. pp. 57-60. [*Aptera*.]
7. —. III. Aufsatz. T. c. pp. 189-195. [*Aptera*.]
8. —. Vorläufige Mittheilung über einige neue *Collembolen* aus den Höhlen des mährischen Karstes. T. c. pp. 265-269.
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## FAUNISTIC: GEOGRAPHICAL DISTRIBUTION.

N.B.—The numbers in brackets refer to "Titles"; by their means it is intended to give a reference to every memoir containing a notice affecting the entomological fauna of each of the twelve regions here adopted. But synonymical notes and changes of systematic position are not included in these references. In addition to giving references to titles of works that actually add to the faunistic record of a region, there are also comprised references to a large number of works on local faunæ, or "stations." The locality in such cases is usually added, and the reference is, as a rule, made direct to the original work, not to our title-numbers, many of these local faunistic notes not being included at all in our list of titles. Besides this a geographical name is frequently added to the literary reference, but this has no value beyond indicating that the paper refers to that locality; a collection of these references with a locality appended would not be complete as regards that locality, for any other references in the same division that have not any particular locality attached may refer also in part to this special locality.

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*Insecta*. Palencia, BARRAS, pp. 168, 169, Act. Soc. Espan. 1900.—STEFANI, Sicily (1274).—SEURAT, Tunis (1202).

*Coleoptera*. KRAUSS (780), PIC (1036).—ESCALERA (380, 381), FUENTE, Spain (475).—UHAGON, Spain (1346).—STIERLIN, Spain and Roumania (1284).—PIC, Spain, Algeria, Tunis (1025).—Excursions entomologiques en Corse, VODOZ, pp. 70 etc., Miscell. ent. viii.—SAHLBERG, Corfu (1144).—DODERO, Italy (337).—FLEISCHER, Italy (424).—GESTRO, Italy (495).—MEIER, Italy (884, 885).—Bologna, ALZONA, pp. 125 etc., Boll. Nat. xx.—Sui Coleotteri della provincia di Roma. Fam. *Carabidae*, Boll. Soc. rom. Zool. vii, pp. 18–33.—Salerno, LOPES, pp. 41–45, Boll. Nat. xx.—DODERO, Italy, Sardinia, Alpes maritimes (335).—BOURGEOIS, Wallachia (163).—



FORMANEK, Bosnia (441).—REITTER, Bosnia (1093).—South Dalmatia, PAGANETTI-HUMMLER, pp. 115 etc., *Illustr. Zeitschr. Ent.* v.—MÜLLER, Montenegro (929).—JAQUET, Roumania, pp. 392–400. *Bull. Soc. Bucarest ix.*—ABEILLE, Smyrna, Genoa (3).—BODEMEYER, Asia Minor (131).—WEISE, Asia Minor (1396).—CHAMPENOIS, Syria (234).—PIC, Syria (1013) and pp. 85, 86, *Miscell. ent.* viii.—PIC, Palestine, p. 171, *Bull. Soc. ent. France* 1900.—BEDEL, N. Africa (87, 89).—PIC, N. Africa (1010, 1011).—VAULOGER, N. Africa (1352).—BEDEL, Algeria (84).—BOURGEAIS, Algeria (159, 162).—CHOBOUT, Algeria (245, 246).—LEWIS, Algeria (820).—PEYERIMHOFF, Algeria (996).—PIC, Algeria (1027).—PIC, Algeria and Tunis (1024).—PIC, Syria, Algeria (1009, 1021, 1034).—PIC, Algeria, Syria, Asia Minor (1023).—THÉRY, Algeria (1318).—FAUVEL, Barbary (398).—BEDEL, Tunis (85, 86).—CHOBOUT, Tunis (244).—PIC, Tunis (1028).—WATERHOUSE, Egypt (1385).

*Hymenoptera.* TOSQUINET (1325 A).—DUSMET, *Notas para el estudio de los Himenópteros de España*, iii, *Act. Soc. Espan.* 1900, pp. 132–135.—STEFANI, Italy (1275).—JAQUET, Roumania (660).—BUYSSON, N. Africa (216).—SCHMIEDEKNECHT, N. Africa (1156).—MORICE, Algeria (926).—HANDLIRSCH, Syria (555).—MARSHALL, Tunis (862).—An excursion to Egypt, Palestine, Asia Minor, etc. in search of Aculeate *Hymenoptera*, MORICE, pp. 164–172, *Ent. Mag.* xxxvi.

*Lepidoptera.* WALSINGHAM (1368).—STAUDINGER, Spain (1267).—Valladolid, FIGUEROA, pp. 151–153, *Act. Soc. Espan.* 1900.—KOLLMORGEN, Corsica (755).—WALSINGHAM, Corsica (1370).—Corsica and S. France, LANG, 104–108, *Entomologist xxxiii.*—LANG, Corsica, *Rhopalocera*, pp. 321–323, *Sci. Gossip.* vi.—STEFANELLI, Italy (1273).—*Lepidoptera* of Italian lakes in October, JONES, pp. 78–80, *Ent. Mag.* xxxvi.—S. Italy, *Rhopalocera*, *Sphinx*, *Bomb.*, CANNAVIELLO, pp. 58–64, 83–87, 101, *Riv. ital. Sci. Nat.* xx.—ELWES, Bulgaria (368).—Bulgarian butterflies, DE LA B. NICHOLL, pp. 29–34, 64–69, *Ent. Rec.* xii.—REBEL, Herzegovina (1074).—*Macrolepidoptera* of Roumania, concluded, FLECK, *Bull. Soc. Bucarest ix.*, pp. 37–142.—WALSINGHAM, Turkey in Asia (1365).—STAUDINGER, Asia Minor (1268).—KORB, Asia Minor (758).—WARREN, Syria (1376).—Ein entomologischer Ausflug nach Nordafrika; PFITZNER, pp. 69–72, *Deutsche ent. Zeitschr. Lep.* xiii.—CHRÉTIEN, Tunis (256).

*Diptera.* RICARDO (1115), STROBL, Spain (1292).—Corsica, MARSHALL, pp. 112–114, *Ent. Mag.* xxxvi.—MIK, Sardinia (909).—BEZZI, Italy (118).—NOË, Italy (945).—TROTTER, Italy (1328).—HENDEL, Trieste (581).—STROBL, Bosnia, Dalmatia (1291).—GIARD, p. 260, *Bull. Soc. ent. France* 1900.—GILES, Egypt (508).

*Hemiptera.* REUTER, O. M. incl. Arabia (1105).—HORVÁTH, Spain (605).—MONTANDON, N. Africa (918).—REUTER, O. M., Marocco (1109).—BUFFA, Italy, *Coccidae* (194).—GUERCIO, Italy, *Coccidae* (543).

*Neuroptera.* *Neurópteros* del Montseny (Barcelona), NAVÁS, *Act. Soc. Espan.* 1900, pp. 92–96; del Moncayo, id. t. c. pp. 172–176; Cartagena, CACERES, t. c. p. 291.—RIBAGA, Italy (1110, 1111, 1113).—*Libellulidi* di Massa-Carrara, BENTIVOGLIO, pp. 86–91, *Atti Soc. Modena xxxiii.*—KLAPÁLEK, Bosnia and Hercegovina (734).—*Odonata*, RÖSSLER, Slavonia and Dalmatia (1133).—SJÖSTEDT, N. Africa, *Termitidae* (121).

*Orthoptera.* BOLIVAR, Spain (134).—NAVÁS, *Ortópteros* del Moncayo (Zaragoza), *Act. Soc. Espan.* 1900, pp. 140–144.—FREY-GESSNER, Roumania, pp. 149, 150, *Bull. Soc. Bucarest ix.*—BURR, Turkey (197).

*Thysanura.* GIARDINA, Italy (505).

*Collembola.* ABSOLON, Herzegowina (10).

(h.) *Caucasus* and *West and Central Asia*, including *Arabia* and *Socotra* [see also (a.) and (b.)]: for *Tibet* see 6.

*Insecta*. Addit. ad faun....Transcasp. BRANCSIK, pp. 106-134, Jahresh. Ver. Trencsin. xxi.

*Coleoptera*. BUYSSON, *Caucasus* (214).—FAUVEL, *Caucasus* (402).—FLEISCHER, *Caucasus* (425).—FORMANEK, *Caucasus* (440).—JACOBSON, *Caucasus* (640).—GAHAN, *Sokotra* (480).—TSCHITSCHÉRINE, *W. Asia* (1330).—JAKOWLEFF, *Armenia and Turkestan* (652).—REITTER, *Turkestan* (1097).—OLSOUFLEW, *W. Asia and Persia* (962).—RÉGIMBART, *Persia* (1079).—SEMENOW, *Persia* (1198).—FAUVEL, *Buchara* (404).—FLEISCHER, *Buchara* (426).—SEMENOW, *Buchara* (1200).—TSCHITSCHÉRINE, *Buchara* (1336).—WEISE, *Buchara* (1394).—JAKOWLEFF, *Centr. Asia* (657).—REITTER, *Kashgar* (1092).—REITTER, *Centr. Asia* (1096, 1100).—SEMENOW, *Centr. Asia* (1196, 1197).

*Hymenoptera*. KIRBY, *Arabia* (723).—KIRBY, *Sokotra* (723).

*Lepidoptera*. HAMPSON, *Socotra* (544).—POUJADE, *Persia* (1051).—WALSINGHAM, *Sokotra* (1367).—HERZ, *Centr. Asia* (584).—PÜNGELER, *Centr. Asia* (1060).—REBEL, *Centr. Asia* (1073).—STAUDINGER, *Thian Schan* (1269).—GRUM-GRSHIMAILO, *S. Mongolia* (541).

*Diptera*. PORTCHINSKY, *Transcaspian* (1048).

*Hemiptera*. DISTANT, *Arabia* (324).—MELICHAR, *Mongolia* (891).

*Orthoptera*. BURR, *N. Persia*, p. 240, *Ent. Rec.* xii.—ZUBOWSKY, *Turkestan* (1431).

4. *AFRICA (TROPICAL & SOUTH)*; for *NORTH AFRICA*, see 3 (g.): for *COMORO Is.*, see 5; *SOCOTRA*, see 3 (h.).

*Insecta*. CANNAVIELLO (225), PEEL (983).

*Coleoptera*. ABEILLE (1), BELON (93), BOURGEOIS (156, 157), BRAUNS (171), BRENSKE (177), CANDÈZE (224), CLOUËT (261), CSIKI (302), FAUVEL (400), GESTRO (492, 498, 499), GORHAM (512), GROUVELLE (539), HAUSER (569), HARTMAN *Curculionide* (564), HEATH (571), HORN (600, 601), JACOBSON, *Abyssinia and Galla-land* (642), JACOBY (644), JAKOWLEFF (651, 653), JANSON (659), KERREMANS (691), KOLBE (747, 748, 750), KRAATZ (760, 761, 762, 764, 765, 768, 770, 771, 774, 776, 778, 779).—KRAATZ, *Selteneafrikanische, Cetoniden*, *Deutsche ent. Zeitschr.* 1900, p. 16.—LESNE (816, 817), LEWIS (820, 821), OLSOUFLEW, *Somaliland, Tauronthophagus* (962); PÉRINGUEY (989), PIC (1001, 1008, 1014, 1017, 1022, 1032), ROUSSEAU (1140), SCHENKLING (1152), SCHWARZ, O. (1172, 1175), TSCHITSCHÉRINE (1331, 1332), WASMANN (1377, 1379), WATERHOUSE (1385), WEISE (1395, 1397, 1401, 1402).

*Hymenoptera*. BUYSSON (217, 219), FRIESE (450, 455), HANDLIRSCH (556, 558), KOHL (741, 742), MAYR (875), SAUSSURE (1149).

*Lepidoptera*. AURIVILLIUS (45), BUTLER (209), BUTLER, *Nyasaland Rhopalocera*, pp. 59-63, *Ann. Nat. Hist. v.*—DISTANT, *Pemba island* (331); FAWCETT (406), GROSE-SMITH (527, 531), HAMPSON (544, 545, p. 228, 548), JOANNIS (664), KARSCH (673, 675, 676, 678, 679), MABILLE (843), QUAIL (1061), ROTHSCHILD & JORDAN (1137), SHARPE (1213), SOUTHONNAX (1254), WARREN (1374).

*Diptera*. GILES (508), RICARDO (1115, 1116), THEOBALD (1314), WASMANN (1378).

*Aphaniptera*. ROTHSCHILD (1135).

*Hemiptera*. COCKERELL *Coccidae* (283); DISTANT (323, 324, 325, 327, 329), KIRKALDY (727, 732), KUHLGATZ (787), MARTIN (863), MONTANDON (920), NEWSTEAD *Coccidae* (938), REUTER, O. M. (1108).

*Neuroptera.* KARSCH (674), KIRBY *Odonata* (719), KIRBY (721), KOLBE (749), R. MARTIN *Odonata* (865), SJÖSTEDT *Termitidae* (1221), SJÖSTEDT *Odonata* (1222).

*Orthoptera.* BORELLI (151), BORMANS (152), BRANCSIK (168), BURR (197, 199), KARSCH (677), KIRBY (720), DISTANT (321), DOMINIQUE (345), SJÖSTEDT (1223).

## 5. MADAGASCAR, including SEYCHELLES and MASCARENE Is.

*Coleoptera.* ALLUAUD (22, 23, 24, 25), BRENSKE (177), CANDÈZE (224), CLOUËT (262), CSIKI (302), FAIRMAIRE (391, 394, 395, 396), FLEUTIAUX (429), HORN (600), JACOBY, p. 266, P. Zool. Soc. London 1900; JAKOWLEFF (653), KERREMANS (691), KOLBE (748), KRAATZ (761, 769, 775), MAINDRON (848), RÉGIMBART Aldabra island (1078); SCHWARZ, O. (1173, 1174), TSCHITSCHÉRINE (1331), TSCHITSCHÉRINE incl. Comores (1334).

*Hymenoptera.* DU BUYSSON (217, 218), FOREL Réunion (437 Appendice), FRIESE (449, 455), SAUSSURE (1149).

*Lepidoptera.* HAMPSON (544), JOANNIS Réunion (661), KARSCH (680), MABILLE (842), MABILLE Madagascar and Comores, Mauritius (843), SONTTHONNAX (1254).

*Diptera.* LAVERAN (800).

*Aphaniptera.* ROTHSCILD (1135).

*Hemiptera.* HORVÁTH (606), MONTANDON (920).

*Odonata.* R. MARTIN (865).

*Orthoptera.* BORMANS (152), HANCOCK (553).

## 6. TROPICAL and EASTERN ASIA, with JAPAN.

For outskirts see also 3 (a.), (g.), (h.). ARABIA see 3 (h.).

N.B. In this division, 6, every paper that refers to India or Japan is pointed out by means of these names.

*Insecta.* KIRBY (722).

*Coleoptera.* ABEILLE Ceylon (2); BRANCSIK W. Asia (167); BRENSKE Ceylon (178); BRENSKE Siam (180); BRENSKE India (182), CANDÈZE incl. India and Tibet (224); CLOUËT Burma (260); CSIKI Malacca (298); CSIKI India, Singapore (302); DODERO Burma (336); FAIRMAIRE China, Formosa (389); GESTRO India (497, 499); GAHAN Hainan Island (482); GAHAN Formosa (481); HAUSER India (568); HORN incl. India (600); HORN India, Burma (601); JACOBY India (645); JAKOWLEFF Setschuen (649); JAKOWLEFF Cochin China (650); JAKOWLEFF China (651); KERREMANS (691), KERREMANS India (693); KRAATZ Tonkin (772); LEWIS (821), LEWIS incl. India (820); OHAUS (954), OHAUS Ceylon (955); OLIVIER India (959); PIC (1018), PIC Tenasserim (1014); PIC China and Japan (1015); PLANET India (1039, 1040), RAFFRAY India (1071); REITTER Tibet (1090); ROESCHKE Tsushima (1125); SCHENKLING Japan (1152); SCHILSKY Japan (1154); SCHWARZ, O. (1174), SEMENOW Setschuen (1192); SEMENOW China Mantchuria (1194); THÉRY China (1319); TSCHITSCHÉRINE (1331), WATERHOUSE Hainan Island (1383); WEISE Ceylon and India (1400), Japan (1394).

*Hymenoptera.* ALFKEN Japan (16, 18); DU BUYSSON (217), CAMERON incl. India (221); CAMERON Japan and India (222); FOREL India (435, 486); FOREL Burma (437, appendice); FOREL Japan (438); FRIESE Malacca (455); FRIESE China (457); SZÉPLIGETI India (1304).

*Lepidoptera.* BUTLER Perak, Siam (210); CROWLEY Hainan (297); DUDGEON India (352); GRUM-GRSHIMAILLO E. China & S. Mongolia (541); HAMPSON (544), HAMPSON incl. China (545); HEYLAERTS Japan (586); JOANNIS Tonkin (662); MATSUMURA Japan (867); LATHY (798), LEECH



China, Japan, Corea (807); MOORE India etc. (923); NICEVILLE (942), ROTHSCHILD India (1136); STRECKER Siam (1289); SWINHÖE (1298, 1299), TETENS Malacca (1312); WALSHINGHAM incl. Japan (1365); WARREN incl. Japan (1375).

*Diptera.* BECKER Singapore (82); GILES India (508); KIEFFER & TROTTER China (709); STEIN Singapore (1279).

*Hemiptera.* BREDDIN (174), BREDDIN Malacca (176); BUCKTON India (192, 193); COCKERELL Japan, *Coccidæ* (280); DISTANT (322, 323, 324, 325, 328, 330), DISTANT incl. Japan (327); GREEN India, *Coccidæ* (525).—List of known Indian *Coccidæ*, GREEN (524); GREEN Ceylon, *Coccidæ* (523); JAKOWLEFF China (656); KIRKALDY Ceylon (733); LEONARDI Ceylon, *Coccidæ* (814); MATSUMURA (868); NEWSTEAD India, *Coccidæ* (940).

*Neuroptera.* FOERSTER (431), KIRBY Hainan (717); R. MARTIN India (865); MORTON Japan and India (928).

*Orthoptera.* BOLIVAR India (133); BORMANS Pulo Penang (152); BURR India (197, 199).

## 7. ASIATIC ARCHIPELAGO, including PAPUA (for islands beyond Papua see 2. INSULAR).

N.B. In this division, 7, when the name of an island, or islands, is mentioned this indicates that the paper refers *only* thereto.

*Insecta.* ANDREWS Christmas Island (29); HANITSCH Kina Balu (561). Java ZEHNTNER (1424-1430).

*Coleoptera.* BOURGEOIS (158), BRENSKE Sumatra (179); CANDÈZE (224), CSIKI (298), CSIKI Java (301); CSIKI New Guinea (299, 302); CSIKI Sumatra, New Guinea (300); FAIRMAIRE Borneo (392, 393); FAUVEL Sumatra (400 p. 70 note); GESTRO Java (497); GORHAM (513), GROUVELLE & LÉVEILLÉ Sumatra (540); HARTMANN Sumatra (565); HARTMANN New Guinea (566); HELLER (573, 574), HORN (600), HORN New Guinea (601); JACOBY (646), JAKOWLEFF (650), KERREMANS (691, 693), KERREMANS Sumatra (692); KOLBE Borneo (751); KRAATZ Key Is. (763, 764); KRAATZ Sumatra (777); KRAATZ New Guinea (773); LESNE Sumatra, *Bostrychides*, Ann. Soc. ent. Belgique xliv, p. 149; LEWIS (820, 821), OHAUS (954), OLIVIER Sumatra (958); OLIVIER Borneo (960); PIC (1004, 1005); PIC Sumatra (1000, 1031); PIC N. Guinea (1002, 1003); RÉGIMBART Sumatra (1081); SCHWARZ, O. (1174), SCHWARZ, O. Sumatra (1170); SHARP Java (1208); SPAETH Sumatra (1259); TSCHITSCHÉRINE (1331), TSCHITSCHÉRINE Java (1332); WEISE Philippines (1402 p. 448).

*Hymenoptera.* ALFKEN Java (20); EMERY (371, 375, 376), FOREL Sumatra (436); FOREL Borneo (437 appendice); MANTERO (851), MANTERO Celebes (850); MOCÁRY New Guinea (914); SZÉPLIGETI New Guinea (1302); SZÉPLIGETI Celebes (1304); ZEHNTNER Java (1429).

*Lepidoptera.* BUTLER Timor (210); FRUHSTORFER Philippines (471); GROSE-SMITH (527), GROSE-SMITH Celebes (528); GROSE-SMITH New Guinea (529, 530); HAMPSON (544), HOLLAND Buru (595); MOORE Borneo (923); NICEVILLE (942), PIEPERS & SNELLEN Java (1038); RÖBER (1122), ROTHSCHILD (1136), SEMPER Philippines (1201); SNELLEN (1250), SNELLEN Java and Celebes (1249); SWINHÖE (1298, 1299), WALSHINGHAM Java, p. 179, Ent. Mag. xxxvi; WARREN (1375).—General discussion of the distribution of *Rhopalocera* in the Malay Archipelago, PAGENSTECHER (974).

*Diptera.* GILES Java (508); KERTÉSZ (695), KERTÉSZ New Guinea (696, 697); SPEISER (1262), SPEISER Sumatra (1260); SPEISER New Guinea (1264); STEIN (1276), STEIN New Guinea (1279).



*Hemiptera.* BREDDIN (172, 174, 175, 176), BREDDIN Sumatra (173); DISTANT (328), DISTANT Java (325).—Philippines, Lombok, DISTANT (327); HORVÁTH (606, 607), KIRKALDY (728), MONTANDON (917, 920).

*Neuroptera.* FÖRSTER New Guinea (432); KARSCH (672); Borneo McLACHLAN (876).

*Orthoptera.* BORMANS (152), BURR (199), BURR Borneo (198).

## 8. AUSTRALIA and TASMANIA (for NEW ZEALAND see 2. INSULAR).

*Insecta.* ILLIDGE (634).

*Coleoptera.* BLACKBURN (123, 124, 125), CANDÈZE (224), CSIKI (302), HELLER (574), KERREMANS (691), KRAATZ (773), LEA (802, 803), LEWIS (820), RAFFRAY (1070), SCHENKLING (1152), SLOANE (1233, 1234).

*Hymenoptera.* ASHMEAD (37, 39), EMERY (371), FOREL (437), FROGGATT (466), MOCSÁRY (914), TURNER (1339).

*Lepidoptera.* Gisborne and Macedon, HAASE, pp. 22–24, Victorian Natural. xvii.—HAMPSON (544, 545, p. 230), LOWER (828, 829), LYELL Tasmania (841); LUCAS (832), SWINHÖE (1298, 1299), TURNER (1338), WARREN (1375), WATERHOUSE (1387).

*Diptera.* COQUILLETT (289), FROGGATT (468), GILES (508), RICARDO (1115).

*Aphaniptera.* ROTHSCHILD (1135).

*Hemiptera.* BREDDIN (174, 175), DISTANT (322, 324, 327), FROGGATT (461), FROGGATT, *Coccidæ* (462); GREEN, *Coccidæ* (521, 522); HORVÁTH (606, 607).

*Neuroptera.* WASMANN *Termitidæ* (1070).

*Orthoptera.* FROGGATT (463).

## 9. NORTH AMERICA. Bahamas and Bermudas, see Antilles.

*Insecta.* COCKERELL & others (264); COCKERELL Arizona and New Mexico (263); GODMAN (511), FLETCHER Canada (428); SMITH New Jersey, 8,537 species (1235); Additional list of Insects taken in Alpine region of Mount Washington, SLOSSON, pp. 319–323, Ent. News Philad. xi.—Insects of the West (chiefly Colorado desert), COQUILLETT & ORCUTT, West Amer. Scient. xi, pp. 49–54.

*Coleoptera.* CASEY (229), FALL (397), HAYWARD (570), HORN (603), KERREMANS (691), LEWIS (820), PIC (1031), RIVERS (1121), SCHWARZ, E. A. Alaska (1169); WASMANN (1377), Quebec *Cicindelidæ*, BEAULIEU, pp. 136 etc. Natural. Canad. xxvii; *Scarabæidæ* id. t. c. p. 166 etc.—Northfield, Massachusetts, BOWDITCH, pp. 392–395, Ent. News Philad. xi.—Central Illinois, WOLCOTT, p. 468, Ent. News Philad. xi.—Breckenridge and Peak Eight, WICKHAM, pp. 597–600, Ent. News Philad. xi.—The *Cicindelidæ* of Kansas, KNAUS, pp. 109–116, Canad. Ent. xxxii.—Phoenix, Arizona, GRIFFITH, pp. 561–570, Ent. News Philad. xi.

*Hymenoptera.* ASHMEAD (37, 42, 43), BASSETT (76), COCKERELL (270, 271, 273, 276–279), DYAR (355), FOREL (438), FRIESE (451, 452), HARRINGTON (563), KINCAID (713), KINCAID Alaska (712), KINCAID Alaska *Tenthredinidæ* (710); MACGILLIVRAY (845), PERGANDE Alaska (988); ROBERTSON (1123), SZÉPLIGETI (1304), TITUS (1324), WHEELER Texas (1409).—New England, Ants, WHEELER, p. 47, Biol. Bull. ii.

*Lepidoptera.* BARNES (70, 71), BEUTENMÜLLER (115, 116), BUSCK (205, 206), DIETZ (318), DODGE (338), DYAR (356, 361, 363, 364, 365), DYAR Alaska (360); FERNALD (416), FRENCH (446), GROTE (538), HAMPSON

(544), HOLLAND Alaska (596); HULST (623, 624, 625, 626), MURTFELDT (932), SKINNER (1225), SMITH (1236, 1237, 1238, 1239, 1240), SNYDER (1253), STRECKER (1289), WARREN Florida (1376).—Yukon, *Rhopalocera*, LYMAN, p. 119, Canad. Ent. xxxii.—Some interesting moths taken at Ottawa, GIBSON, pp. 13-19, Ottawa Natural. xiv.—Manitoba, HEATH, pp. 93-96, Canad. Ent. xxxii.—Additions to the list of Manitoba butterflies, with notes on other species, HANHAM, pp. 365-367, Canad. Ent. xxxii.—The hawk and bombycine moths of New Brunswick. Introductory list, McINTOSH, pp. 301-302, Bull. Soc. New Brunswick xix.—Silver Lake, Utah, SNYDER, pp. 363-368, Ent. News Philad. xi.—Louisiana, *Catocala*, DODGE, p. 433, Ent. News Philad. xi.—DYAR, *Dichogama*, Canad. Ent. xxxii, p. 271.—TROSCHEL, *Cocytius cluentius*, Ent. News Philad. xi, p. 324.—*Blastobasis sequella*, not N. American, WALSHINGHAM, p. 179, Ent. Mag. xxxvi.

*Diptera*. CHAGNON Quebec (233); COCKERELL (268, 269), DOANE (333), FRENCH (447), GILES (508), HOWARD (612), JOHNSON (665, 666), COQUILLET (288, 291, 292, 293, 294, 616), COQUILLET Alaska (290); KELLOGG (683, 685), MELANDER (889), MELANDER & BRUES (890), SNOW & MILLS (1252), WEBSTER (1388), WHEELER (1410).—Ottawa *Diptera*, HARRINGTON, pp. 127-135, Ottawa Natural. xiv.

*Hemiptera*. BAKER (55, 57), BALL (58, 59, 60), BOGUE, *Coccidæ* (132), CAUDELL (230), COCKERELL (279), COCKERELL, *Coccidæ* (282), DOANE *Aphidæ* (334); EHRHORN, *Coccidæ* (367); HEIDEMANN (572), HUNTER (628), JOHNSON, *Aphidæ* (667); KING, *Coccidæ* (714, 715, 716); OSBORN (967, 969, 970, 971), PERGANDE, *Aphidæ* (986); PERGANDE Alaska, *Aphidæ* (987); QUAINANCE, *Aleurodidæ* (1065); TINSLEY & COLLEGE *Coccidæ* (1322).—New Mexico, food-plants, COCKERELL, p. 302, Entomologist xxxiii.—Miscellaneous notes on *Coccidæ* from Western Massachusetts, KING, pp. 116-118, Psyche ix.

*Anoplura*. OSBORN (968).

*Neuroptera*. BANKS (63, 65, 66, 67), BANKS Alaska (64); TOUGH (1327), WILLIAMSON (1417).—Alaska *Mallophaga*, KELLOGG & KUWANA (686).—Indiana *Odonata*, WEITH, p. 641, Ent. News Philad. xi.—Arkansas, *Odonata*, ADAMS, pp. 621, 622, Ent. News Philad. xi.—Dragon-flies of the province of Quebec, FYLES, pp. 52-57, Rep. ent. Soc. Ontario 1900.—Maine, *Myrmeleon immaculatus*, PACKARD, p. 95, Psyche ix.

*Orthoptera*. BLATCHLEY (126), HUNTER & SUTTON Kansas (629); McNEILL (880, 882), SCUDDER Catalogue (1176); SCUDDER (1177, 1178-1181, 1183, 1184, 1185), SCUDDER & HENSHAW (1182), WHEELER (1412).—CAUDELL Alaska, P. Washington Ac. ii, p. 511.—SCUDDER, *Mantis religiosa*, Psyche ii, p. 119.—SCUDDER, localities for Western *Tryxalineæ*, Psyche ix, p. 95.

*Thysanura*. Maine, *Machilis variabilis*, PACKARD, p. 107, Psyche ix.

*Collembola*. HARVEY (567).

## 10. CENTRAL AMERICA (MEXICO to PANAMA incl.).

*Insecta*. GODMAN (511).

*Coleoptera*. CANDÈZE (224), CASEY (229), GORHAM (513), JACOBY (647), KERREMANS (691, 694), LÉVEILLÉ (818), LEWIS (820), MATTHEWS (870), PIC (1016), SCHENKLING (1152, 1153), SCHWARZ, O. (1174), TSCHITSCHÉRINE (1331, p. 465).

*Hymenoptera*. ASHMEAD (37), COCKERELL (279), FRIESE (450, 451, 452, 455), SZÉPLIGETI (1304).—On a small collection of bees from Juarez, Entomologist xxxiii, pp. 217, 218.

*Lepidoptera*. DRUCE (348), HAMPSON (544), MABILLE (844), SCHAUS

(1151), SNELLEN (1250), STRECKER (1289), WARREN (1376).—*Tropæa* n. sp. cf. *Bombyces*.—Nicaragua, BUTLER, pp. 189–191, Entomologist xxxiii.

*Diptera*. COQUILLET (288).

*Hemiptera*. BAKER (56), BALL (60), CHAMPION (235), DISTANT (325, 328), OSBORN (967).

*Neuroptera*. BANKS, *Psocidæ*, *Planipennia*, *Trichoptera* (63). — McLACHLAN, *Odonata*, p. 189, Ent. Mag. xxxvi.

*Orthoptera*. BALL (59), BIOLLEY (122), BURR (197), HANCOCK (552), MCNEILL (880), REHN (1088), SCUDDER (1176, 1179).

## 11. ANTILLES, including BERMUDAS, BAHAMAS.

*Insecta*. GODMAN (511).

*Coleoptera*. ARROW (35), CASEY, Cuba (229); CASEY, Bahamas (229, p. 67 etc.).

*Hymenoptera*. ASHMEAD (37).

*Lepidoptera*. DRUCE (348), HAMPSON (544), SCHAUS, St Lucia (1151); SHARPE, Bahamas (1214); WARREN, including Bahamas (1376).

*Diptera*. COQUILLET, Puerto Rico (288); SPEISER, Cuba (1261).

*Hemiptera*. BALL (60), DISTANT (325), KIRKALDY, Jamaica (731); OSBORN (967).—Puerto Rico *Coccidæ*, PERGANDE & COCKERELL, pp. 92, 93, Bull. U. S. Dep. Agric. Ent. xxii.

*Orthoptera*. HANCOCK, Hayti (552).

## 12. SOUTH AMERICA, including TRINIDAD.

*Insecta*. GODMAN (511).

*Coleoptera*. ARROW, Trinidad (35); AURIVILLIUS (44), BERG, Argentina (100); BOURGEOIS (157, 160), BOURGEOIS, Patagonia (155); BRENSKE Patagonia (181); BRÈTHES (183), CANDÈZE (224), FAIRMAIRE, Patagonia (390); FAUVEL, inc. Chili (399); GERMAIN, Chili (491); GORHAM (513), HORN (600, 601, 602), JACOBY (647, 648), JAKOWLEFF (649, 650), KERREMANS (691, 694), KRAATZ (767), LAMEERE, Patagonia (795); LÉVEILLÉ (818), LEWIS (820, 821), OHAUS (956, 957), PIC (1006, 1014, 1016, 1018, 1019, 1020, 1021), PIC, Chili (1032); RAFFRAY (1071), RÉGIMBART (1080), ROUSSEAU, Patagonia (1138); SCHENKLING (1152, 1153), SCHWARZ, O. (1174), SPAETH (1258), TSCHITSCHÉRINE (1331), WASMANN (1377), WATERHOUSE (1384), WEISE (1398, 1403).

*Hymenoptera*. ANDRÉ, Patagonia (28); ASHMEAD, incl. Trinidad (37); BERG, Tierra del Fuego (99); BUYSSON (217), COCKERELL (274), FOREL (438 p. 285), FRIESE (451, 452, 453, 455, 456, 458), FRIESE, including Chili (450); HOWARD, Chili (614); KRIECHBAUMER (783), SZÉPLIGETI (1304); TOSQUINET, Patagonia, Argentina (1326).

*Lepidoptera*. DANNATT (311), DOGNIN (340, 341), DRUCE (348, 349), GROSE-SMITH (527), HAMPSON (544), RIFFARTH (1118), SCHAUS (1151), SNELLEN, incl. Chili (1250); STAUDINGER (1271), STRECKER (1289), WARREN (1376).

*Diptera*. BECKER (82), HUNTER, Catalogue (630); JACOBS, Patagonia, Argentina (639); RICARDO (1117), RICARDO, incl. Chili (1115); v. RÖDER (1124), SPEISER (1261), STEIN (1280).

*Hemiptera*. BAKER (55, 57), BERG (97), BERG, Chili (102); MONTANDON (917, 920), COCKERELL, *Coccidæ* (284, 285, 286); HEMPEL, *Coccidæ* (576, 577, 578); TINSLEY & COLLEGE, Trinidad, *Coccidæ* (1322).

*Neuroptera*. THERESE VON BAYERN (1317), ENDERLEIN, *Psocidæ* (377, 378).

*Orthoptera*. BERG (101), BORMANS (152), BRUNNER, Patagonia *Steno-*

*pelmatidae* (186); BRUNNER, Tierra del Fuego (187); BURR (197, 199), GIGLIO-TOS (507), HANCOCK (551), THERESE VON BAYERN (1317).

*Thysanura*. SILVESTRI (1216).

*Collembola*. WAHLGREN, Patagonia (1362).

### PALÆO-ENTOMOLOGY.

Some American fossil (tertiary) *Coleoptera* referred to *Scolytidae*, HOPKINS (599).

*Coleoptera* *Bembidium berendti* from preglacial peat, Lauenberg, MEUNIER (901), n. sp.

*Hymenoptera*. Two new genera of *Mymaridae* from copal described without names, MEUNIER (902).—*Mymaridae* in amber and copal, MEUNIER pp. 362-366, Bull. Soc. ent. France 1900 (903).

*Diptera*. *Palæosynapha* n. g. *Mycetophilidae* near *Synapha*—no sp. mentioned—in amber, MEUNIER (900).—The genera of *Mycetophilidae* found in amber, MEUNIER (905).

*Hem. Heteroptera*. The spp. of *Naucoris* of Oppenheim discussed, MEUNIER (904).

*Palæoheteroptera* n. g. *Nepidae*, for *Naucoris carinata* Opp. No. 409, MEUNIER (904).

*Paleonepidoideus* n. g. *Nepidae* for *Naucoris carinata* Opp. No. 41 id. (904).

### III. SYSTEMATIC.

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N.B.—The reference numbers collected under the headings of the various groups refer to "Titles" on pp. 5-81, and are intended to give, in each case, a complete list of all memoirs containing anything of importance in connection with the group.

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Classification of Insects, *Archipteres*, *Rhynchotes*, *Schizothoraciques*, *Zygothoraciques*, LAMEERE (794).

The ocelli of Insects, REDIKORZEW (1076).

Homologies of bases of leg, WALTON (1372).

Determination of sex, CUÉNOT (304).

Aetiology of coloration, BRUNNER (189).

List of mites found on insects, and of Insects inhabited by mites, with names of the mites LEONARDI (815).

#### (A.) COLEOPTERA.

Classification: 3 suborders, *Cantharidiformes*, *Staphyliniformes*, *Carabiformes*; the series and families, LAMEERE (793).

Some notes on phylogeny, PEYERIMHOFF (997).

Number of Malpighian tubes and their value in classification, PEYERIMHOFF (998).

For notes on the earlier stages of numerous species of a variety of families, see XAMBEU (1420). These are not recorded in detail below.

Intimate metamorphosis of a beetle, NEEDHAM (936).

Anatomy of testes, BORDAS (143).

The male sexual glands and accessory organs, BORDAS (144, 145).

Ovipositor, anatomy, SEURAT (1204).



The wings of *Coleoptera*; *Clavicornia*, *Brachymeri*, *Hygrophili*, KEMPERS (687).

Stridulating organs, GAHAN (478).

Odoriferous organs, BRANDES (170).

Cases of malformation and their origin, TORNIER (1325).

Spinning beetles, KEW, pp. 168–170, *Sci. Gossip* vii.

### CICINDELIDÆ.

[Cf. ALLUAUD (22), BERG (98), BORDAS (144), CSIKI (303), FAIRMAIRE (395), HORN (600–604).]

*Cicindelidæ* divided into “*Alocosternaliæ*” and “*Platysternaliæ*,” HORN, p. 214, *Ent. Nachr.* xxvi.

For extensive notes on variation of *Cicindelidæ* with numerous suggestions for the suppression of supposed species and other synonymy, see HORN, t. c. pp. 214–218.

*Cicindelidæ* of Hungary (in Hungarian), CSIKI (303).

*Cicindelidæ* of Kansas, notes on localities, etc., KNAUS, pp. 109–116, *Canad. Ent.* xxxii.

Stridulating organ of *Oxycheila*, GAHAN (478).

*Cicindelidæ* frequenting termitaria in S. America, BERG (98).

*Cicindela anthracina*, characters, p. 116, *hyperborea* and *limbata* distinguished, p. 117, *varians*, characters, p. 118, HORN, *Ent. Nachr.* xxvi; *C. silvicola*, *maura*, varr. SCHULZ, p. 159, t. c.; *C. melancholica*, subsp. *albomarginalis*, *C. kalea* subsp. n. *humeralis*, p. 205, *C. neumanni* subsp. n. *pseudosoa*, p. 208, HORN, *Deutsche ent. Zeitschr.* 1900; *C. flexuosa*, burrows, natural history, PONSELLE (1046).

*C. (Chaetostyla) andriana*, Madagascar, ALLUAUD, p. 18, *Bull. Soc. ent. France* 1900; *C. horni*, Madagascar, FAIRMAIRE, p. 134, t. c.; *C. declivis*, New Guinea, HORN, p. 364, *Deutsche ent. Zeitschr.* 1900; *C. pseudosenilis*, California, HORN, p. 117, *Ent. Nachr.* xxvi; *C. io*, N. Guinea, p. 203, *bouchardi*, Sumatra, p. 204, *waterhousei*, Ceylon, p. 206, *putzeysi*, Angola, *circumpictoides*, N. Zealand?, p. 207, *laticornis*, E. Africa, p. 208, *C. (Calochroa) angulicollis*, Dacca, p. 209, HORN, *Deutsche ent. Zeitschr.* 1900 : n. spp.

*Ctenostoma simpliciceps*, Rio Janeiro, HORN, p. 361, *Deutsche ent. Zeitschr.* 1900, n. sp.

*Euryoda waageni*, Soudan, p. 198, *bucephala*, Madagascar, p. 199, *reconciliatrix*, Tenasserim, p. 200, HORN, t. c. : n. spp.

*Heptodonta arrowi*, Burma, HORN, p. 362, t. c. n. sp.

*Myrmecoptera micans*, Transvaal, HORN, p. 210, t. c.; *M. batesi*, E. Africa, HORN, p. 363, t. c. : n. spp.

*Odontochila pentacomioides*, p. 202, *cyaneomarginata* (Chaud.), p. 203, Brazil, HORN, t. c. : n. spp.

*Orychila haenschii*, p. 364, *affinis*, p. 365, Ecuador, HORN, t. c. : n. spp.

*Orygonia uniformis*, Ecuador, HORN, p. 201, t. c. n. sp.

*Pogonostoma laporti*, Madagascar, HORN, p. 193, t. c.; *P. vestitum*, p. 134, *perrieri*, p. 135, Madagascar, FAIRMAIRE, *Bull. Soc. ent. France* 1900 : n. spp.

*Tetracha steinheili*, Peru, HORN, p. 211, *Deutsche ent. Zeitschr.* 1900; *T. suturalis*, p. 53, *camposi*, p. 54, Ecuador, HORN, *Ent. Nachr.* xxvi : n. spp.

*Therates rugulosus*, Sumatra, p. 194, *kraatzi*, Penang, p. 195, *gestroi*, Lakhon, p. 196, *maindroni*, Borneo, p. 197, *waagenorum*, Darjiling, p. 198, HORN, *Deutsche ent. Zeitschr.* 1900 : n. spp.

*Tricondyla (Derocrania) halyi*, p. 193, Ceylon, *longesulcata*, S. India, p. 194, HORN, t. c.; *T. gounelli*, S. India, HORN, p. 361, t. c. : n. spp.

## CARABIDÆ.

[The following memoirs relate to *Carabide*, viz.:—ALLUAUD (24, 25), BEDEL (84, 85, 86), BLACKBURN (123), BORDAS (124), BRANCSIK (167), DIERCKX (317), DODERO (335), FAIRMAIRE (394), FLEISCHER (425), GAHAN (478), GANGLBAUER (131, 486, 488), GESTRO (495), HAYWARD (570), HELLER (573), JACOBSON (642), KINCAID (711), MAINDRON (848), MALLÁSZ (849), MEUNIER (901), PIC (1031), REITTER (1090, 1095, 1101, 1102), RIVERS (1121), ROESCHKE (1125), ROUSSEAU (1139), SAHLBERG (1143, 1144), SCHWARZ (1169), SEMENOW (1191 to 1196), SHARP (1211), SLOANE (1233, 1234), TSCHITSCHÉRINE (1330 to 1336), WEBSTER (1389), XAMBEU (1420).]

Classification of *Harpalini*, and revision of the palaearctic genera, SEMENOW, Horæ Soc. ent. Ross. xxxiv, pp. 335–370.

Tables of the palaearctic *Harpalini*, REITTER, Verh. Ver. Brunn xxxviii.

Revision of the European blind *Bembidiidae*, GANGLBAUER (486).

Stridulating organs of *Cychrus blethisa*, GAHAN (478).

*Abacetus impressicollis* (Dej. as *Distrigus*) = (*dostojewskii* Tsch.), p. 273, *A. percusioides* Fairm. = (*gagatinellus* Kolbe), p. 275, *salamensis* K. = (*kenigi* Tsch.), p. 276, TSCHITSCHÉRINE, Horæ Soc. ent. Ross. xxxiv.

*A. insularis*, Comoro islds, p. 571, *exul*, Madagascar, p. 572, TSCHITSCHÉRINE, t. c.; *A. tridens*, p. 156, *babitschewi*, p. 158, *micros*, p. 159, E. Africa, *spurius*, Java, p. 160, TSCHITSCHÉRINE, op. cit. xxxiii; *A. anthracinus*, p. 273, *orientalis*, p. 276, *idiomerus*, p. 278, E. Africa, *ornatus*, p. 279, *pictus*, Tonkin, *suspectus*, Madagascar, p. 281, *olivaceus*, Cape Colony, p. 282, *chalcophterus*, p. 283, *aratus*, Tonkin, *capicola*, S. Africa, p. 284, *nitidus*, Obock, p. 286, *nitidulus*, p. 287, *infimus*, p. 288, Madagascar, *rufescens*, Cape Colony, *longulus*, Tonkin, p. 289, *picescens*, Cochinchina, p. 290, TSCHITSCHÉRINE, op. cit. xxxiv : n. spp.

*Acupalpus immundus*, S. Europe, p. 138, *boops*, Cairo, p. 140, REITTER, Verh. Ver. Brunn xxxviii; *A. boops*, Cairo, SAHLBERG, p. 182, Ofv. Finska Forh. xlii; *A. (Egadroma) vaulogerii*, Tunis, BEDEL, p. 247, Bull. Soc. ent. France 1900 : n. spp.

*Adrinus affinis*, Venezuela, p. 245, *anescens*, Para, p. 246, TSCHITSCHÉRINE, Horæ Soc. ent. Ross. xxxiv, n. spp.

*Amara famelica* var. n. *nivium*, TSCHITSCHÉRINE, p. 328, Bull. Soc. ent. France 1900.

*Anatrichis sexstriatus*, Australia, SLOANE, p. 560, P. Linn. Soc. N. S. Wales xxiv, n. sp.

*Anchomenus gracilis* Gyll. = (*Agonum oblongum* Dej.), p. 247, *A. thoreyi* Dej. = (*melanocephalus* Dej.), p. 248, BEDEL, Bull. Soc. ent. France 1900.

*Anillus abnormis*, Corfu, SAHLBERG, p. 137, Verh. Ges. Wien I, redescribed p. 180 Ofv. Finska Forh. xlii, n. sp.

*Anisodactylus nemorivagus* var. n. *atripes*, GANGLBAUER, p. 138, BODEMEYER (131).

*Anophthalmus*, Venetian species, GESTRO, p. 567, Ann. Mus. Genova xl.

*A. gestroi*, Apennines, DODERO, p. 400, t. c.; *A. fabianii*, Venice, GESTRO, p. 570, t. c. : n. spp.

*Antarctia* referred to *Platysmatini*, TSCHITSCHÉRINE, p. 674, Horæ Soc. ent. Ross. xxxiv.

*A. racovitzi*, *subamaroides*, Patagonia, ROUSSEAU, p. 108, Ann. Soc. ent. Belgique xlv, n. spp.

*Antarctobium* subg. n. of *Platysma*, for *P. magellanicum* Bl., TSCHITSCHÉRINE, p. 460, Horæ Soc. ent. Ross. xxxiv.

*Aristus curtungulus*, Syria, p. 46, *subconstrictus*, *lucidus*, W. Asia, p. 47, REITTER, Verh. Ver. Brunn xxxviii, n. spp.

- Arsenoxenus nitescens*, Borneo or Sumatra, TSCHITSCHÉRINE, p. 475, Horæ Soc. ent. Ross. xxxiv.
- Asmerinx knauthi*, Tyrol, GANGLBAUER, p. 577, Verh. Ges. Wien I, n. sp.
- Bedeliolus* n. g. near *Pogonus*, p. 577, for *B. vigil*, Transcaspian, p. 579, *pernix*, E. Persia, p. 582, n. spp., SEMENOW, Horæ Soc. ent. Ross. xxxiv.
- Bembidium tropicum* var. *abyssinicus*, CANNAVIELLO, p. 300, Bull. Soc. ent. Ital. xxxii.
- B. islandicum*, Iceland, SHARP, p. 254, Ent. Mag. xxxvi; *B. (Chlorodidum) album*, Transcaspian, p. 174, *B. (Peryphus) giganteum*, Turkestan, p. 175, *amnicola*, Amu Daria, *B. (Lopha) albomaculatum*, Alatau, p. 177, SAHLBERG, Ofv. Finska Forh. xlii; *B. berendti*, n. sp. near *exoletum* Scudd., see Palæoentomology, p. 167 : n. spp.
- Blechnus*; revision, REITTER, pp. 369–380, Deutsche ent. Zeitschr. 1900.
- B. binotatus*, Egypt, p. 373, *fissuralis*, Greece, etc., p. 376, *fulvibasis*, *politulus*, Caucasus, p. 377, *cordatulus*, Istria, p. 378, *longulus*, East Siberia, p. 379, REITTER, t. c.; *B. schmiedeknechti*, Jericho, Pic, p. 91, Echange xvi : n. spp.
- Bothynoproctus* n. g. *Euchroini*, p. 453, for *B. mattoensis*, n. sp., Brazil, p. 454, TSCHITSCHÉRINE, Horæ Soc. ent. Ross. xxxiv.
- Bradycellus koltzei*, Tibet, REITTER, p. 133, Verh. Ver. Brunn xxxviii, n. sp.
- Brososoma moriturum*, Setschuen, SEMENOW, p. 83, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Brosus anomalus* cf. *Chaetobrosus*.
- Calosoma*, examination of numerous types, synonymy, ROESCHKE (1125).
- C. glasunowi*, Turkestan, p. 303, *anthrax*, Mongolia, p. 304, *grumi*, China, p. 306, SEMENOW, Horæ Soc. ent. Ross. xxxiv; *C. grandidieri*, Madagascar, MAINDRON, p. 16, Bull. Mus. Paris 1900 : n. spp.
- Carabops* n. g. p. 261, for *C. kachovskyi*, Abyssinia, p. 263, *harrarensis*, Gallaland, p. 264, n. spp., JACOBSON, Annuaire Mus. St. Petersb. v.
- Carabus*: examination of numerous types, synonymy, ROESCHKE (1125); *C. cancellatus*, *emarginatus* as one species, BORN, p. 185, Verh. Ges. Wien I; *C. violaceus*; the varieties, RONCHETTI, pp. 117–120, Riv. ital. Sci. Nat. xx; *C. italicus* var. n. *ronchettii*, BORN, p. 184, Verh. Ges. Wien I; *C. obsoletus* var. n. *csikii*, p. 231, *C. procerus* var. n. *prunneri*, p. 232, cuts, MALLÁSZ, Potfuz. Termes. Kozl. xxxii; *C. auroniteus*, *granulatus*, varr., SCHULZ, p. 159, Ent. Nachr. xxvi; *C. comptus* varr., KRAATZ, pp. 381, 382, Deutsche ent. Zeitschr. 1900; *C. truncaticollis*, early stages, KINCAID, p. 368, pl. xxii, P. Washington Ac. ii.
- C. hissarianus*, Buchará, SEMENOW, p. 676, Horæ Soc. ent. Ross. xxxiv;
- C. (Zoocarabus) kastschenkoi*, Siberia, BRANCSIK, p. 97, pl. iv, fig. 1, Jahresh. Ver. Trencsin xxi : n. spp.
- Cardiostenus* subg. n., cf. *Trichocellus*.
- Carenidium pyripenne*, Shark's Bay, SLOANE, p. 386, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Carenum*; species grouped and discussed, pp. 363–368; characters of various species, synonymy, pp. 368–372, SLOANE, t. c.
- C. emarginatum*, p. 372, *ovale*, p. 374, *lobatum*, p. 375, *serratipes*, p. 376, *tumidipes*, p. 377, *regulare*, p. 380, Australia, SLOANE, t. c., n. spp.
- Cascelius*, a valid genus, characters, SEMENOW, p. 80, Horæ Soc. ent. Ross. xxxiv.
- Casnonia cœrulans* (Künck.), Madagascar, ALLUAUD, p. 410, Bull. Mus. Paris 1899; *C. sexmacula*, p. 415, *tschoffeni*, *brunneomarginata*, p. 416, *cyaneolimbata*, *levis*, p. 418, Centr. Africa, ROUSSEAU, Ann. Soc. ent. Belgique xlv : n. spp.
- Celistus* subg. n. of *Lesticus* for *L. andamanensis*, TSCHITSCHÉRINE, p. 186, Horæ Soc. ent. Ross. xxxiv.



- Chetauchenium* subg. n. of *Platysma*, for *P. convexipenne* Fairm. = (*Percus alienus* Reed), TSCHITSCHÉRINE, p. 461, t. c.
- Chetobrosceus* n. g. for *Brosceus anomalus* Chaud., SEMENOW, p. 44, t. c.
- Clivina obliquata* Putz. = (*adelaida* Blackb.), BLACKBURN, p. 35, Tr. R. Soc. S. Austral. xxiv.
- C. carinifrons*, Buchara, REITTER, p. 225, pl. ii, fig. 1, Wien. ent. Zeit. xix ; *C. egyptensis*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Colliuris cærulans* and *Stenidea perrieri*, one species, ALLUAUD, p. 19, Bull. Soc. ent. France 1900.
- C. madagascariensis, suturatus*, Madagascar, ALLUAUD, p. 411, Bull. Mus. Paris 1899, n. spp.
- Colpodes placidus*, Celebes, HELLER, p. 3, pl., fig. 1, Abh. Mus. Dresden ix, No. 5, n. sp.
- Coptolabrus fruhstorferi*, Tsushima, ROESCHKE, p. 162, Ent. Nachr. xxvi, n. sp.
- Craspedonotus margellanicus* Kr. referred to *Pseudobrosceus*, SEMENOW, p. 45, Horæ Soc. ent. Ross. xxxiv.
- Cratognathus*, see *Nesacrinopus*.
- Cyclothorax peryphoides* and *cordicollis* distinctions, BLACKBURN, p. 36, Tr. R. Soc. S. Austral. xxiv.
- C. cordicollis*, p. 563, *laticollis*, p. 565, Australia, SLOANE, P. Linn. Soc. N. S. Wales xxiv, n. spp.
- Cymindis lineata* and *avillaris* distinguished, GANGLBAUER, p. 139, BODEMEYER (131).
- Cynthidia*, notes on, TSCHITSCHÉRINE, pp. 217, 218, Horæ Soc. ent. Ross. xxxiv.
- Darodilia robusta*, Queensland, SLOANE, p. 579, P. Linn. Soc. N. S. Wales xxiv, n. sp.
- Dichirotrichus* (*Trichocellus*), *punctidorsis*, *tshitscherini*, Transcaspian, p. 125, *angularis*, E. Siberia, p. 127, *externepunctatus*, Thian-Schan, p. 128, *bradycelliformis*, Irkutsk, p. 129, REITTER, Verh. Ver. Brunn xxxviii, n. spp.
- Drimostoma humerosum* var. n. *dilutipes*, TSCHITSCHÉRINE, p. 265, Horæ Soc. ent. Ross. xxxiv ; *D. fuscipes* Br. referred to *Adrimus*, characters, TSCHITSCHÉRINE, p. 244, t. c.
- D. fatuum*, Congo, p. 264, *ambiguum*, p. 266, *conforme*, Madagascar, *procerulum*, Comores, p. 268, TSCHITSCHÉRINE, t. c., n. spp.
- Dromius cordicollis*, note, VORBRINGER, p. 302, Ent. Nachr. xxvi ; *D. accentifer* Raffr. referred to *Metabletus*, redescribed, SAHLBERG, p. 181, Ofv. Finska Forh. xlii ; *D. opacicolor* referred to *Microdaccus*, REITTER, p. 242, Wien. ent. Zeit. xix.
- D. pilifer*, p. 12, *dendrobates*, p. 13, Algeria, BEDEL, Bull. Soc. ent. France 1900 ; *D. caucasicus*, W. Caucasus, SEMENOW, p. 88, Horæ Soc. ent. Ross. xxxiv ; *D. australiensis*, Australia, SLOANE, p. 583, P. Linn. Soc. N. S. Wales xxiv : n. spp.
- Epactius* (*Omophron*) *grandidieri*, Madagascar, ALLUAUD, p. 409, Bull. Mus. Paris 1899, n. sp.
- Epiharpalus* subg. n. of *Harpalus*, REITTER, p. 75, Verh. Ver. Brunn xxxviii.
- Eucamptognathus*, table of species, TSCHITSCHÉRINE, pp. 109–117, Horæ Soc. ent. Ross. xxxiv.
- E. granulifer*, p. 118, *bouvieri*, p. 121, *lesnei*, p. 125, Madagascar, TSCHITSCHÉRINE, t. c. ; *E. ikope*, Madagascar, TSCHITSCHÉRINE, p. 574, t. c. : n. spp.
- Eucarterus* n. g., p. 37 and p. 53, for *sparsutus* Reitt., REITTER, Verh. Ver. Brunn xxxviii.
- Eudalia niger*, N. S. Wales, SLOANE, p. 581, P. Linn. Soc. N. S. Wales xxiv, n. sp.



- Eudromus ankavandra*, Madagascar, TSCHITSCHÉRINE, p. 455, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Eutany* subg. n. of *Platysma*, p. 457, for *P. arctum*, *extenuatum*, n. spp., Chili, p. 458, TSCHITSCHÉRINE, t. c.
- Eutoma levissime*, N. Australia, SLOANE, p. 384, P. Linn. Soc. N. S. Wales xxv, n. sp.
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- Feroniomorpha* revised, TSCHITSCHÉRINE, pp. 371–392, t. c.
- Gnathaphanus*; synonymy and characters of numerous, SLOANE, pp. 553–555, P. Linn. Soc. N. S. Wales xxiv; *G. latus*, p. 555, *herbaceus*, p. 556, Australia, id. t. c. : n. spp.
- Glycia tschitscherini*, Buchara, SEMENOW, p. 681, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Harpalobius* subg. n. of *Harpalus*, REITTER, p. 76, Verh. Ver. Brunn xxxviii.
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- Harpaloxys* subg. n. of *Harpalus*, REITTER, p. 75, t. c.
- Harpalus caliginosus*, destructive to strawberries, WEBSTER (1389).
- H.* (*Artabas*) *chobauti*, Albaron, p. 78, *H.* (*Epiharpalus* subg. n.) *torridoi*, Irkutsk, p. 81, *tithonus*, Mardin, p. 62, *tiridates*, Syria, p. 83, *cyclopius*, Turkestan, p. 84, *eneolus*, Portugal, p. 86, *H.* (*Lasiharpalus* subg. n.) *subangulatus*, *salinulus*, Asia Minor, p. 86, *tenuelimbatus*, Portugal, p. 87, *decoloratus*, France etc. p. 91, *H.* (*Harpaloderus* subg. n.) *janus*, Spain, p. 102, *H.* (*Harpalobius* subg. n.) *satanas*, Tunis, p. 104, *mihatschi*, Araxes Valley, p. 106, *skutariensis*, Albania, p. 107, *danieli*, *lubricus*, Asia Minor, p. 108, *amator*, S. Russia, p. 110, *H.* (*Actephilus*) *acupalpoides*, p. 112, *bradycelloides*, p. 113, Mongolia, *H.* (*Pheuginus*) *albanicus*, Albania, p. 114, *tingens*, p. 115, *strasseri*, Circassia, *relator*, S. Russia, p. 116, *pulchrinulus* hab.?, p. 118, *pseudoserripes*, Turkestan, *amicus*, Amasia, p. 121, REITTER, Verh. Ver. Brunn xxxviii : n. spp.
- Harpaloner marginatus* MacL., referred to *Thenarotes*, SLOANE, p. 560, P. Linn. Soc. N. S. Wales xxiv.
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- Holconotus madagascariensis*, Madagascar, TSCHITSCHÉRINE, p. 291, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Homalosoma*, table of species, SLOANE, p. 567, P. Linn. Soc. N. S. Wales xxiv.
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- Laccopterum humeralis*, N. W. Australia, SLOANE, p. 361, P. Linn. Soc. N. S. Wales xxv, n. sp.
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- Lasiharpalus* subg. n. of *Harpalus*, REITTER, p. 75, Verh. Ver. Brunn xxxviii.
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- Macrochilus nigrotibialis*, Celebes, HELLER, p. 2, Abh. Mus. Dresden ix, No. 5, n. sp.
- Marsyas bahiæ*, Brazil, TSCHITSCHÉRINE, p. 216, Horæ Soc. ent. Ross. xxxiv, n. sp.
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- Notiophilus orientalis* Chaud., redescribed, SPAETH, p. 50, Verh. Ges. Wien l.
- Omophron clavareum*, Congo, ROUSSEAU, p. 412, Ann. Soc. ent. Belgique xlv, n. sp.
- Omphroides bucculentus*, Madagascar, ALLUAUD, p. 413, Bull. Mus. Paris 1899, n. sp.
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- Pangus roseni*, Transcaspien, BRANCSIK, p. 98, Jahresh. Ver. Trencsin xxi, n. sp.
- Paranoites* subg. n. of *Platysma*, for *P. cordicolle* Dej., TSCHITSCHÉRINE, p. 394, Horæ Soc. ent. Ross. xxxiv.
- Parhyppates* Motsch., characters and species, TSCHITSCHÉRINE, p. 463, t. c.
- Pedionomorphus nucleayi*, p. 577, *ruficollis*, p. 578, Australia, SLOANE, P. Linn. Soc. N. S. Wales xxiv : n. spp.
- Percosia politissima*, Lebanon, REITTER, p. 81, Deutsche ent. Zeitschr. 1900, n. sp.
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- Plagioplatys* subg. n. of *Platysma*, p. 471, for *P. vagans* Dej., TSCHITSCHÉRINE, Horæ Soc. ent. Ross. xxxiv.
- Platyderus elegans*, Tunis, BEDEL, p. 170, Bull. Soc. ent. France 1900, n. sp.
- Platysma*: subgen. see *Antarctobium*, *Chaetauchenium*, *Eutanyis*, *Feroniomorpha*, *Hoplauchenium*, *Meraulax*, *Metamelaninus*, *Paranortes*, *Parhy-pates*, *Plagioplatys*, *Ophryogaster*, *P.* subg. *Bothriopterus*, revision, TSCHITSCHÉRINE, pp. 606–613, Horæ Soc. ent. Ross. xxxiv; *P.* (*Feroniomorpha*) *orbigny* n. n. for *obtusum* Br., SEMENOW, p. 377, t. c.
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- Pseudaristus* n. g. p. 34 and p. 48, for *A. modestus* Schaum, REITTER, Verh. Ver. Brunn xxxviii.
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- Psilonothus* n. g. p. 557, near *Thenarotidius*, for *P. ovalis* n. sp., Australia, p. 558, SLOANE, P. Linn. Soc. N. S. Wales xxiv.
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- P. phylarchus*, N. S. Wales, SLOANE, p. 572, P. Linn. Soc. N. S. Wales xxiv, n. sp.
- Rhathymus*, characters, TSCHITSCHÉRINE, pp. 448–450, Horæ Soc. ent. Ross. xxxiv.
- Sarothrocrepis humeratus*, Victoria, SLOANE, p. 582, P. Linn. Soc. N. S. Wales xxiv, n. sp.
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- Siagona hovana*, Madagascar, FAIRMAIRE, p. 85, Bull. Soc. ent. France 1900, n. sp.
- Simodontus*, p. 573, *mandibularis*, p. 574, *laviceps*, p. 575, Australia, SLOANE, P. Linn. Soc. N. S. Wales xxiv, n. spp.
- Singilis soror* = (*maroccana* Fairm.), BEDEL, p. 248, Bull. Soc. ent. France 1900.
- Stomoxus striaticollis*, *rufipes*, *japonicus*, characters, synonymy, SEMENOW, pp. 261–264, Horæ Soc. ent. Ross. xxxiv.
- Tachys*, monograph of the N. American, 45 species divided into nine groups, HAYWARD, Tr. Amer. ent. Soc. xxvi, pp. 191–238.
- T. centralis*, Transcaspian, p. 178, *humeralis*, Tunis, p. 179, SALHBERG, Ofv. Finska Forh. xlii; *T. mulwalensis*, Australia, SLOANE, p. 566, P. Linn. Soc. N. S. Wales xxiv; *T. falli*, p. 199, *liebecki*, p. 207, *frontalis*, p. 212, *bradycellinus*, p. 224, *latipennis*, p. 227, *columbiensis*, p. 231, N. America, HAYWARD, Tr. Amer. ent. Soc. xxvi : n. spp.
- Tetragonoderus perrieri*, Madagascar, FAIREMAIRE, p. 86, Bull. Soc. ent. France 1900, n. sp.
- Thenarotes bicolor*, p. 558, *tachioides*, p. 559, Australia, SLOANE, P. Linn. Soc. N. S. Wales xxiv, n. spp.
- Trachelocyphus* n. g., p. 270, for *Abacetus*? *trisulcis* Chaud. and *T. enigmaticus* n. sp., Sierra Leone, p. 272, TSCHITSCHÉRINE, Horæ Soc. ent. Ross. xxxiv.
- Trechus nigrinus* var. n. *anatolicus*, GANGLBAUER, p. 134, BODEMEYER (131); *T. baldensis pasubianus*, GANGLBAUER, p. 576, Verh. Ges. Wien l.
- T. wienckei*, Patagonia, ROUSSEAU, p. 108, Ann. Soc. ent. Belgique xlv, n. sp.

- Trichocellus*, supplementary revision, TSCHITSCHÉRINE, pp. 52–58, Horæ Soc. ent. Ross. xxxiv.  
*T. (Cardiostenus* subg. n.) *parvicollis*, Transcaspian, TSCHITSCHÉRINE, t. c. n. sp.  
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- Haliplus variegatus* var. n. *pallidior*, MÜLLER, p. 115, Verh. Ges. Wien l.  
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- [Cf. BORDAS (144), GANGLBAUER (131), RÉGIMBART (1078 to 1081), REITTER (1095), SEMENOW (1196).]  
*Agabus tristis*, early stages, KINCAID, p. 371, pl. xxiii, figg. 3–6, P. Washington Ac. ii.  
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*Anagabus limbibasis*, Buchara, REITTER, p. 226, pl. ii, f. 3, Wien. ent. Zeit. xix, n. sp.  
*Bidessodes* n. g., p. 528, for *B. semistriatus*, p. 529, *fragilis*, p. 530, n. spp., S. America, and *Bidessus elongatus* Sharp, RÉGIMBART, Ann. Mus. Genova xl.  
*Copelatus pulchellus*, var. from Aldabra, RÉGIMBART, p. 50, Bull. Soc. ent. France 1900.  
*C. weyersi*, Sumatra, RÉGIMBART, p. 148, Ann. Soc. ent. Belgique xlv, n. sp.  
*Deronectes abnormicollis*, p. 682, *microthorax*, p. 683, Buchara, SEMENOW, Horæ Soc. ent. Ross. xxxiv, n. spp.  
*Dytiscus dauricus*, early stages, KINCAID, p. 370, P. Washington Ac. ii.  
*Hydroporus bodemeyeri*, Asia Minor, GANGLBAUER, p. 139, BODEMEYER (131), n. sp.  
*Laccophilus weyersi*, Sumatra, RÉGIMBART, p. 147, Ann. Soc. ent. Belgique xlv, n. sp.  
*Platambus escalerai*, Persia, RÉGIMBART, p. 121, Bull. Soc. ent. France 1901, n. sp.

## GYRINIDÆ.

- Variability of sculpture, MÜLLER, p. 120, Verh. Ges. Wien l.



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*Celostoma hispanicum*, pupa, BILLECOCQ, p. 138, Bull. Soc. ent. France 1900.

*Helochares nigrifrons* Brancs., note on, RÉGIMBART, p. 50, Bull. Soc. ent. France 1900.

*Helophorus glacialis* var. n. *deubeli*, KRAUSS, p. 239, Wien. ent. Zeit. xix.

*H. jakowlewi* (= *elongatus* Kuw. nec Motsch.), Russia, SEMENOW, p. 89, Horæ Soc. ent. Ross. xxxiv; *H. mervensis*, Transcaspian, SEMENOW, p. 587, t. c. : n. spp.

*Hoplydræna*; revision, PORTA, pp. 7–9, pl. i, Miscell. ent. viii.

*Hydrophilus* (*Hydrocharis* auct.), table of palearctic, SEMENOW, pp. 585–587 and 688, Horæ Soc. ent. Ross. xxxiv; *H. piceus*, stridulation and copulation, DONISTHORPE, p. 291, Ent. Rec. xii.

*H. profanifuga*, Transcaspian, p. 583, *sartus*, Buchara, p. 584, SEMENOW, Horæ Soc. ent. Ross. xxxiv, n. spp.

*Laccobius argillaceus*, p. 188, *sublævis*, *littoralis*, p. 189, Turkestan, SAHLBERG, Ofv. Ak. Forh. xlii, n. spp.

*Leliæna* n. g. near *Hydræna*, for *L. sparsa* n. sp., Turkestan, SAHLBERG, p. 203, Ofv. Finska Forh. xlii.

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*L. (E.) appendiculatus*, Algeria, id. p. 192, t. c.; *L. discolor*, Vermont, CASEY, p. 52, J. N. York Ent. Soc. viii : n. spp.

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*Philhydrus mediterraneus*, Italy, etc., p. 185, *salomonis*, Bethlehem, p. 187, SAHLBERG, t. c. : n. spp.

*Volvulus cupreus*, Aldabra Is., RÉGIMBART, p. 51, Bull. Soc. ent. France 1900, n. sp.

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[Cf. ABEILLE (3), BERNHAUER (107 to 111, 131), BORDAS (144), BRÈTHES (183), CASEY (229), DODERO (335, 337), FAUVEL (398 to 404), GAHAN (479), GANGLBAUER (487), HELLER (573), KRAATZ (767), LOKAY (826), LUZE (840), PEYERIMHOFF (995, 997), REITTER (1095, 1099), SEMENOW (1196), SHARP (1210), WASMANN (1377), XAMBEU (1420).]

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- Staphylinide* living on *Rodentia*, FAUVEL, p. 61, Rev. Ent. franc. xix.
- Achenopsis* n. g. near *Achenium*, for *A. inequalis*, Sumatra, p. 70, *æqualis*, Congo, p. 71, n. spp., FAUVEL, t. c.
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- Alianta bipartita*, France and Corsica, FAUVEL, p. 243, Rev. Ent. franc. xix, n. sp.
- Aloconota bodemeyeri*, Asia Minor, BERNHAUER, p. 142, BODEMEYER (131) and p. 52, Wien. ent. Zeit. xix, n. sp.
- Amblyopinus* and *Myotyphlus* (= *Cryptommatus* Matth.), characters, synonymy, FAUVEL (399).
- A. brandesi*, Peru, KRAATZ, p. 212, Deutsche ent. Zeitschr. 1900; *A. germani*, Peru, p. 63, *waterhousei*, Ecuador, p. 64, FAUVEL, Rev. Ent. franc. xix : n. spp.
- Anthobium densipenne*, Erzeroum, *cribrellum*, Calabria, p. 218, *albipilis*, Tyrol, p. 219, FAUVEL, t. c. n. spp.
- Anthophagus spectabilis* var. n. *muelleri*, BERNHAUER, p. 539, Verh. Ges. Wien I.
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- Astenus siculus*, Sicily, *walkeri*, Malta, p. 224, *notatus*, *pictipennis*, Persia, p. 225, FAUVEL, Rev. Ent. franc. xix, n. spp.
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- A. meridianus*, S. Europe, FAUVEL, p. 244, Rev. Ent. franc. xix, n. sp.
- Atheta* (*Hydrosmecta*) *gracilicornis* var. n. *flavipennis*, BERNHAUER, p. 537, Verh. Ges. Wien I; *A. longula*, aberration, BERNHAUER, p. 42, t. c.
- A. æquinotialis*, Congo, FAUVEL, p. 73, Rev. Ent. franc. xix; *A. alpigrada*, Alps, *A. (Aloconota) diodon*, France, p. 239, *grandicornis*, Tyrol, p. 240, FAUVEL, t. c.; *A. (Oreostiba) spurnyi*, Tyrol, *A. (Microdota) bufonis*, Vienna, BERNHAUER, p. 40, Verh. Ges. Wien I; *A. dolomitana*, Tyrol, p. 534, *A. (Metarya) polaris*, Norway, p. 536, BERNHAUER, t. c.; *A. (Geostiba) incisa*, Digne, PEYERIMHOFF, p. 9, Bull. Soc. ent. France 1900; *A. normandi*, p. 59, *bihamata*, p. 60, Tunis, FAUVEL, Rev. Ent. franc. xix; *A. rugosicollis*, Armenia, p. 49, *A. (Tetropla) circassica*, Circassia, p. 50, *A. (Hydrosmecta) pallidicollis*, Turkestan, p. 52, BERNHAUER, Wien. ent. Zeit. xix : n. spp.
- Blediotrogus* n. g. near *Trogophlæus*, for *B. guttiger*, n. sp., New Zealand, SHARP, p. 234, Ent. Mag. xxxvi.
- B. cribricollis*, New Zealand, FAUVEL, p. 184, Rev. Ent. franc. xix, n. sp.
- Bledius hispidulus* (= *morio* Heer), FAUVEL, p. 161, t. c.
- B. gabonensis*, *curticornis*, p. 68, *aculeatus*, p. 69, Congo, FAUVEL, t. c.; *B. amplicollis*, New Zealand, FAUVEL, p. 185, t. c. : n. spp.
- Callicerus muensteri*, Genzano, BERNHAUER, p. 533, Verh. Ges. Wien I, n. sp.
- Calliderma obsoletum*, Congo, FAUVEL, p. 71, Rev. Ent. franc. xix, n. sp.
- Chitos* n. g. for *Dinarda nigrita* Ros., CASEY, p. 55, J. N. York Ent. Soc. viii.
- Conurus tropicus*, Congo, FAUVEL, p. 73, Rev. Ent. franc. xix, n. sp.

- Coprophilus dimidiatipennis*, Ashkhabad, FAUVEL, p. 223, t. c. n. sp.  
*Coproporus pumilio*, cf. *Dictyon*.  
*Cryptobium severini*, Congo, FAUVEL, p. 72, t. c. n. sp.  
*Ctenomastax varicolor*, Andalusia, Tunis, FAUVEL, p. 57, t. c. n. sp.  
*Cyrtotyphlus* n. g. near *Leptotyphlus*, p. 401, for *C. convevus* n. sp., Liguria, p. 402, cut, DODERO, Ann. Mus. Genova xl.  
*Decusa* n. g. for *Homœusa expansa* Lec., CASEY, p. 54, J. N. York Ent. Soc. viii.  
*Delcaster bactrianus*, Bucharâ, SEMENOW, p. 684, Horæ Soc. ent. Ross. xxxiv, n. sp.  
*Deliphrum (Mannerheimia) micros*, Turkestan, FAUVEL, p. 222, Rev. Ent. franc. xix, n. sp.  
*Dictyon* n. g. *Tachyporini* anomalous, for *Coproporus pumilio* Epp., FAUVEL, p. 160, t. c.  
*Diestota testacea* Kr.=(*mayeti* Rey), FAUVEL, p. 245, t. c.  
*Digrammini*, new tribe near *Aleocharini*, approaching *Oxytelini*, for the following,  
*Digrammus* n. g., p. 123, for *D. miricollis*, n. sp., Auckland, p. 124, FAUVEL, t. c.  
*Dinarda*, cf. *Chitosa*.  
*Dioclus senegalensis*, Congo, FAUVEL, p. 72, t. c. n. sp.  
*Dorylostethus raffrayi*, S. Africa, with *Dorylus*, WASMANN, p. 266, pl. xiv, fig. 20, Zool. Jahrb. Syst. xiv, n. sp.  
*Doryloxenus lujæ*, Congo, with *Anomma wilverthi*, WASMANN, p. 263, pl. xiv, fig. 19, t. c. n. sp.  
*Ecitodulus* n. g. *Aleocharini*, p. 233, for *E. crassicornis* n. sp., Brazil, with *Eciton legionis*, p. 235, pl. xiii, fig. 4, WASMANN, t. c.  
*Ecitogaster* n. g. *Aleocharini*, p. 218, for *E. schmalzi* n. sp., Brazil, with *Eciton predator*, p. 224, pl. xiii, fig. 1, WASMANN, t. c.  
*Ecitonides* referred to *Pæderini* near *Echiaster*, characters, WASMANN, pp. 247–249, t. c.  
*E. longiceps*, pl. xiv, fig. 15, *brevicornis*, Brazil, with *Eciton cæcum*, WASMANN, p. 249, t. c. n. spp.  
*Ecitonidia* n. g. *Aleocharini*, p. 283, for *E. wheeleri* n. sp., Texas, p. 284, WASMANN, t. c.  
*Ecitophya* n. g. for *Ecitomorpha simulans* Wasm., WASMANN, p. 224, pl. xiii, fig. 2, t. c.  
*Ecitopora major*, Brazil, with *Eciton quadriglume*, WASMANN, p. 238, t. c.; *E. tenella*, Texas, WASMANN, p. 284, t. c. : n. spp.  
*Ecitonemia* n. g. *Aleocharini*, p. 231, for *E. mirabilis* n. sp., Brazil, with *Eciton quadriglume*, p. 233, pl. xiii, fig. 3, WASMANN, t. c.  
*Ecitoxenus* n. g. *Xenocephalini*=*Cephaloplectini*, p. 245, for *E. heyeri* n. sp., Brazil, with *Eciton cæcum*, p. 247, pl. xiv, fig. 14, WASMANN, t. c.  
*Edrabius* n. g. near *Amblyopinus*, for *E. philippianus* n. sp., Chili, FAUVEL, Rev. Ent. franc. xix.  
*Eurymniusa plitvicensis*, Croatia, BERNHAUER, p. 39, Verh. Ges. Wien 1, n. sp.  
*Geodromicus lestevoides*, Palæarctic, REITTER, p. 228, pl. ii, fig. 6, Wien. ent. Zeit. xix, n. sp.  
*Geostiba longicollis*, *conifera*, *thermarum*, p. 241, *rhunensis*, *furcifera*, p. 242, *brevicollis*, p. 243, France, FAUVEL, Rev. Ent. franc. xix, n. spp.  
*Heterothops baicalensis*, Siberia, FAUVEL, p. 233, t. c. n. sp.  
*Holotrochus helmsi*, *vagepunctus*, p. 187, *microphthalmus*, *anophthalmus*, p. 188, New Zealand, FAUVEL, t. c. n. spp.  
*Homalium azoricum*, Azores, p. 219, *cordicolle*, Russia, p. 220, *cribriceps*, Syria, *asturicum*, Asturias, p. 221, FAUVEL, t. c. n. spp.  
*Homalota vicina*, bituberculate ♂, KEYS, p. 134, Ent. Mag. xxxvi, and CHAMPION, t. c. p. 162.

- Hygrogeus* n. g. for *Geodromicus* subg. *Hygrogeus* Rey, GANGLBAUER, Käf. Mitteleur. ii, p. 710. [REY's subgen. was not indexed in Zool. Rec. 1880, this name is therefore new.]
- Hygrogeus penicillatus*, Buchara, REITTER, p. 49, Deutsche ent. Zeitschr. 1900, n. sp.
- Hygropora densa*, France, FAUVEL, p. 251, Rev. Ent. franc. xix, n. sp.
- Hypocyptus claviger*, Tuscany, FAUVEL, p. 235, t. c. n. sp.
- Indoseitalinus* subg. n., cf. *Xantholinus*.
- Lathrobium doderoi*, note on, FAUVEL, p. 282, Bull. Soc. ent. France 1900.
- L. (Glyptomerus) doderoi*, Genoa, ABEILLE, p. 204, t. c.; *L. sahlbergi*, Turkestan, FAUVEL, p. 227, Rev. Ent. franc. xix : n. spp.
- Leptacinus linearis* a valid species, characters, GERHARDT, pp. 72-74, Deutsche ent. Zeitschr. 1900 and p. 10, Zeitschr. Ent. Breslau xxv.
- Leptoglenus* subg. n., cf. *Leptolinus*.
- Leptolinus* (subg. n. *Leptoglenus*) *cæcus*, Samarcand, REITTER, p. 227, pl. ii, fig. 5, Wien. ent. Zeit. xix, n. sp.
- Leptotyphlus perpusillus*, Genoa, GESTRO, p. 573, Ann. Mus. Genova xl, n. sp.
- Leptusa*; monograph of palaearctic, BERNHAUER, Verh. Ges. Wien I, pp. 399-432; *L. koronensis* and *abdominalis*, distinguished, BERNHAUER, p. 42, t. c.
- L. (Sipalia) helitasi*, Digne, PEYERIMHOFF, p. 8, Bull. Soc. ent. France 1900; *L. major*, p. 416, *doderoi*, p. 418, Italy, *abeillei*, Spain, p. 423, BERNHAUER, Verh. Ges. Wien I; *L. tirolensis*, Austria, p. 43, *tenerima*, Reynosa, p. 44, *merkli*, Turkey, p. 45, BERNHAUER, t. c. : n. spp.
- L. secreta*, S.E. Europe, BERNHAUER, p. 201, t. c.; *L. sudetica*, Moravia, LOKAY, p. 77, Wien. ent. Zeit. xix; *L. merkli*, Asia Minor, BERNHAUER, p. 143, BODEMEYER (131) : n. spp.
- Leptusina* n. g. near *Ocyusa*, p. 198, for *L. bosnica* n. sp., Bosnia, p. 199, GANGLBAUER, Verh. Ges. Wien I.
- Lestera bucharica*, Buchara, p. 222, *præses*, Corsica, p. 223, FAUVEL, Rev. Ent. franc. xix, n. spp.
- Medon lutrellus*, *hypogeus*, Syria, FAUVEL, p. 227, t. c.; *M. fulvus*, Congo, FAUVEL, p. 69, t. c. : n. spp.
- Micropeplus devillei*, Corsica, GANGLBAUER, p. 203, Verh. Ges. Wien I, n. sp.
- Mimocete* and *Doryloxenus*, distinctions queried, WASMANN, pp. 263-265, Zool. Jahrb. Syst. xiv.
- Mycetoporus oreophilus*, Siebenbürgen, BERNHAUER, p. 45, Verh. Ges. Wien I, n. sp.
- Myllaena tenuicornis*, S. France, FAUVEL, p. 236, Rev. Ent. franc. xix, n. sp.
- Myrmecopora minima*, Greece, BERNHAUER, p. 538, Verh. Ges. Wien I, n. sp.
- Myrmedonia legionis*, Brazil, with *Eciton legionis*, WASMANN, p. 240, pl. xiii, fig. 6, Zool. Jahrb. Syst. xiv, n. sp.
- Myrmobiota* distinguished from *Homocusa*, CASEY, p. 54, J. N. York Ent. Soc. viii.
- Niphetodes spaethi*, E. Europe, GANGLBAUER, p. 259, Verh. Ges. Wien I, n. sp.
- Ocalea reitteri*, Caucasus, BERNHAUER, p. 46, Wien. ent. Zeit. xix, n. sp.
- Ocytus rufipes* var. n. *obscuripes*, BERNHAUER, p. 145, BODEMEYER (131); *O. brachypterus* var. n. *aureotomentosus*, BERNHAUER, p. 46, Verh. Ges. Wien I.
- O. integer*, Smyrna, ABEILLE, p. 203, Bull. Soc. ent. France 1900; note on *O. integer*, FAUVEL, p. 282, t. c.; *O. ottomanus*, Constantinople, FAUVEL, p. 230, Rev. Ent. franc. xix : n. spp.
- Ocyusa grandis*, Alps, p. 250, *cartusiana*, Grande-Chartreuse, p. 251, FAUVEL, t. c.; *O. bicolor*, Asia Minor, BERNHAUER, p. 140, BODEMEYER (131) and p. 47, Wien. ent. Zeit. xix : n. spp.



- Oligota pilicornis*, Bordeaux, FAUVEL, p. 236, Rev. Ent. franc. xix, n. sp.  
*Ocyusida* n. g. near *Ocyusa*, p. 197, for *O. skalitzkyi* n. sp., Tyrol, p. 198, BERNHAUER, Verh. Ges. Wien l.  
*Omalium muensteri*, Norway, BERNHAUER, p. 540, t. c. n. sp.  
*Oreusa* subg. n. of *Leptusa* for *L. tirolensis* Bernh., etc., BERNHAUER, pp. 403 & 413, t. c.  
*Orochares angustata*, habits, KRAUSS, p. 239, Wien. ent. Zeit. xix.  
*Othius punctulatus* Goeze = (*fulvipennis* Fab.), FAUVEL, p. 228, Rev. Ent. franc. xix.  
*O. turemenus*, Turkestan, FAUVEL, p. 228, t. c. n. sp.  
*Oxyopoda peyerimhoffi*, Digne, BERNHAUER, p. 204, Verh. Ges. Wien l; *O. spaethi*, Austria, BERNHAUER, p. 532, t. c.; *O. rudis*, Valais, p. 252, *nimbicola*, Monte Rosa, p. 253, FAUVEL, Rev. Ent. franc. xix : n. spp.  
*Paderus listeri*, Christmas Is., GAHAN, p. 89, Monogr. Christmas Island, n. sp.  
*Parisanopus* n. g. near *Isanopus*, p. 215, for *P. castaneipennis* n. sp., Buenos Aires, p. 216, BRÈTHES, Comun. Mus. Buenos Aires i.  
*Philonthus juvenilis* Peyr. = (*ganglbaueri* Bernh.), BERNHAUER, p. 46, Verh. Ges. Wien l; *P. cruentatus* var. n. *extinctus*, BERNHAUER, p. 145, BODEMEYER (131).  
*P. armeniacus*, Caucasus, BERNHAUER, p. 538, t. c.; *P. limbatus*, p. 230, Baikal, *alaiensis*, Turkestan, p. 231, *turemenus*, Buchara, p. 232, FAUVEL, Rev. Ent. franc. xix : n. spp.  
*Phlaeocharis* (*Scotodytes*) *ichnusa*, Sardinia, DODERO, p. 404, Ann. Mus. Genova xl, n. sp.  
*Phlaeopora nitidiventris* (= *reptans* Rey), Algeria, FAUVEL, p. 61, Rev. Ent. franc. xix, n. sp.  
*Placusa depressa, complanata*, characters, synonymy, FAUVEL, p. 237, t. c.  
*P. nitida*, Corsica, FAUVEL, p. 238, t. c. n. sp.  
*Planeustomus congoensis*, Africa, FAUVEL, p. 66, t. c. n. sp.  
*Platyprosopus ochraceus*, Congo, FAUVEL, p. 72, t. c. n. sp.  
*Platysthetus rugifrons*, Asia Minor, BERNHAUER, p. 145, BODEMEYER (131) and p. 55, Wien. ent. Zeit. xix, n. sp.  
*Protoskiusa* n. g. near *Ocyusa*, for *P. paradoxa* n. sp., Switzerland, p. 200, BERNHAUER, Verh. Ges. Wien l.  
*Quedius umbrinus, anceps*, characters, FAUVEL, p. 233, Rev. Ent. franc. xix; *Q. ochropterus* var. n. *obscuripennis*, BERNHAUER, p. 538, Verh. Ges. Wien l; *Q. longicornis*, habits, FAUVEL, p. 66, Rev. Ent. franc. xix.  
*Q. quadriceps*, Syria, FAUVEL, p. 232, t. c.; *Q. microphthalmus*, Asia Minor, BERNHAUER, p. 144, BODEMEYER (131) and p. 53, Wien. ent. Zeit. xix : n. spp.  
*Scopeus schneideri*, Corsica, BERNHAUER, p. 202, Verh. Ges. Wien l; *S. parvicornis*, p. 69, *brachycerus*, p. 70, Congo, FAUVEL, Rev. Ent. franc. xix : n. spp.  
*Sharpia*, cf. *Toxoderus*.  
*Sipalia turcica*, Belgrade, BERNHAUER, p. 535, Verh. Ges. Wien l; *S. anatolica*, Broussa, FAUVEL, p. 245, Rev. Ent. franc. xix : n. spp.  
*Soliusa* n. g. p. 53 for *C. crinitula* n. sp., N. America, p. 54, CASEY, J. N. York Ent. Soc. viii.  
*Stenus erichsoni* var. n. *longelytratus*, BERNHAUER, p. 48, Verh. Ges. Wien l.  
*S. liechtensteini*, Tyrol, p. 47, *transsilvanicus*, Transsylvania, p. 48, BERNHAUER, t. c. n. spp.  
*Stilicus korbi*, Lenkoran, *longicollis*, Persia, FAUVEL, p. 226, Rev. Ent. franc. xix, n. spp.  
*Sunius ampliventris*, Buchara, REITTER, p. 228, pl. ii, fig. 4, Wien. ent. Zeit. xix, n. sp.

- Sympolemon* n. g. *Aleocharini*, p. 258, for *S. anommatis* n. sp., Congo with *Anomma wilverthi*, p. 263, pl. xiv, fig. 18, WASMANN, Zool. Jahrb. Syst. xiv.
- Tachinus*; revision of European and Siberian, with tables of species, synonymy, and characters of sexes, LUZE, Verh. Ges. Wien I, pp. 475-508.
- Tachinus absconditus*, Mongolia, p. 475, *schneideri*, Caucasus, *furcatus*, Mongolia, p. 476, *gracilicornis*, Caucasus, p. 477, LUZE, t. c.; *T. sahlbergi*, Turkestan, FAUVEL, p. 234, Rev. Ent. franc. xix : n. spp.
- Tachyporus vaulogeri*, Algeria, FAUVEL, p. 59, t. c. n. sp.
- Teropalpus* Sol. (s. g. of *Trogophlæus*) = (*Trogolinus* Sharp), FAUVEL, p. 182, t. c.
- Tetradonia goeldii*, Brazil, with *Eciton quadriglume*, WASMANN, p. 237, pl. xiii, fig. 5, Zool. Jahrb. Syst. xiv, n. sp.
- Thiasophila nitescens*, France, FAUVEL, p. 250, Rev. Ent. franc. xix, n. sp.
- Toxoderus* n. n. for *Sharpia* Fauv., FAUVEL, p. 189, t. c.
- Trogolinus* subg. n., cf. *Trogophlæus* and *Trogophlæus anglicanus* and *unicolor*, note, FAUVEL, p. 182, t. c.
- T. genalis*, p. 66, *congoensis*, *apicicornis*, p. 67, Congo, FAUVEL, t. c.; *T.* (subg. n. *Trogolinus*) *coloratus*, p. 231, *unicolor*, New Zealand, *anglicanus*, England, p. 232, *T.* (*Troginus*) *zealandicus*, N. Zealand, p. 233, SHARP, Ent. Mag. xxxvi : n. spp.
- Typhlocyptus pandellei*, description and figure, FAUVEL, pp. 190-192, Rev. Ent. franc. xix.
- Xantholinus tricolor* Fabr. = (*elegans* Oliv. nec Nordm. and *meridionalis* Lac.), FAUVEL, p. 162, t. c.
- X. inuus*, Algeria, FAUVEL, p. 58, t. c.; *X. scutellaris*, Turkey, p. 228, *tenipunctus*, Talysch Mts., p. 229, FAUVEL, t. c.; *X.* (*Indoscitalinus* subg. n.) *albicornis*, Celebes, HELLER, p. 5, Abh. Mus. Dresden ix, No. 5; *X.* (*Eulissus*) *badariottii*, Brazil, WASMANN, p. 282, Zool. Jahrb. Syst. xiv : n. spp.
- Xenocephalus schmalzi*, p. 242, pl. xiv, fig. 12, *limulus*, p. 243, pl. xiii, fig. 7, *goeldii*, fig. 8, p. 244, Brazil, with *Eciton*, WASMANN, t. c. n. spp.

## PSELAPHIDÆ.

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- Amaurops carinata*, ♂ characters, DODERO, p. 407, Ann. Mus. Genova xl.
- A. alpina*, Piedmont, DODERO, p. 406, t. c. n. sp.
- Anarmoxys* n. g. near *Briara* and *Eupines*, p. 166, for *A. simplicifrons*, n. sp., Australia, p. 167, RAFFRAY, P. Linn. Soc. N. S. Wales xxv.
- Arthmius macrocephalus*, habits, WASMANN, p. 250, Zool. Jahrb. Syst. xiv.
- Articerus hamatipes*, p. 241, pl. x, fig. 40, *bipartitus*, p. 242, *cultripes*, p. 243, *curvicornis*, p. 244, W. Australia, RAFFRAY, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Batraxys lævigata*, *convergens*, Australia, RAFFRAY, p. 148, t. c. n. spp.
- Batrisodes mastersi*, Australia, RAFFRAY, p. 146, t. c. n. sp.
- Batrisus asperulus*, pl. x, fig. 26, p. 139, *leai*, *bimucronatus*, p. 142, *rugicornis*, p. 143, *falsus*, p. 144, Australia, RAFFRAY, t. c. n. spp.
- Briara frontalis*, Australia, RAFFRAY, pl. x, fig. 31, p. 163, n. sp.
- Bryaxis hirta* Macleay referred to *Batrisus*, RAFFRAY, p. 139, P. Linn. Soc. N. S. Wales xxv; *B. nasutu* etc. synonymy, REITTER, p. 11, Wien. ent. Zeit. xix; *B. pirazzolii*, ♀, KRAUSS, p. 292, Verh. Ges. Wien I.
- Bythinus dalmatinus* and *melinensis*, distinguished, Reitt., KRAUSS, p. 292, Verh. Ges. Wien I; *B. ericksoni*, variation, KRAUSS, p. 240, Wien.

- ent. Zeit. xix; *B. halbherr* ♂, p. 412, *grouvellei* n. var.? *alticola*, p. 414, DODERO, Ann. Mus. Genova xl; *B. diversicornis* var. *pallidior*, PIC, p. 403, Bull. Soc. ent. France 1900.
- B. tunisus*, Tunis, PIC, p. 404, Bull. Soc. ent. France 1900; *B. (Trichobythus* subg. n.) *anophthalmus*, p. 408, *B. (Bythoxenus)* *vaccae*, p. 410 with var. *bensaë*, p. 412, *alpestris*, p. 413, Italy, DODERO, Ann. Mus. Genova xl : n. spp.
- Centrophthalmus monilicornis*, India, RAFFRAY, p. 305, Bull. Soc. ent. France 1900, n. sp.
- Commatocerus bucharicus*, Transcaspian, REITTER, p. 50, Deutsche ent. Zeitschr. 1900, n. sp.
- Ctenisophus* n. g. p. 208, for Australian *Ctenistes*, with *C. morosus*, p. 209, *patruelis*, p. 210, *inequalis*, p. 211, *laticollis*, p. 213, n. spp., Australia, RAFFRAY, P. Linn. Soc. N. S. Wales xxv.
- Ctenistes heterocerus*, Buchara, REITTER, p. 49, Deutsche ent. Zeitschr. 1900, n. sp.
- Curculionellus riparius*, N. S. Wales, RAFFRAY, p. 205, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Didimoprora armata*, *leana*, p. 223, *puncticollis*, p. 224, *dimidiata*, p. 225, Australia, RAFFRAY, t. c. n. spp.
- Eupines*, discussed and classified, p. 171, much synonymy of Schaufuss and others species, pp. 174–110, RAFFRAY, t. c.
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- Eupinoda* n. g. near *Eupines*, for *E. leana*, pl. x, fig. 15, p. 168, *amplicollis*, p. 169, *diversicornis*, pl. x, fig. 10, p. 170, n. spp., Australia, RAFFRAY, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Eupinopsis punctata*, Australia, RAFFRAY, p. 192, t. c. n. sp.
- Gerallus* Sharp (= *Zosimus* Schauf.), RAFFRAY, p. 234, t. c.
- G. dimidiatus*, Swan River, id., p. 236, t. c. n. sp.
- Gnesion* n. g. *Bythinini*, p. 192, for *G. rufulum*, n. sp., Australia, p. 193, RAFFRAY, t. c.
- Hamotopsis* n. g. near *Hamotus*, for *H. australasiae*, n. sp., N. S. Wales, RAFFRAY, p. 217, t. c.
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- Leanymus* n. g. near *Didimoprora*, p. 219, for *L. palpalis*, n. sp., Australia, p. 220, pl. x, figg. 5, 6, RAFFRAY, t. c.
- Mesoplatus tuberculatus*, pl. x, fig. 32, *longicollis*, p. 134, *mastersi*, p. 135, *nitidus*, p. 136, Australia, RAFFRAY, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Paraplectus biplagiatus*, p. 132, pl. x, fig. 33, *infuscatus*, p. 133, Australia, RAFFRAY, t. c. n. spp.
- Pselaphophus unicolor*, N. S. Wales, RAFFRAY, p. 203, t. c. n. sp.
- Pselaphus leanus*, p. 198, *tuberculifrons*, p. 199, *elongatus*, *crassus*, p. 200, *pilosus*, p. 201, Australia, RAFFRAY, t. c. n. spp.
- Pselaptus* (by error as *Pselaphus*) *formicarius*, Colombia, RAFFRAY, pp. 305 & 460, Bull. Soc. ent. France 1900, n. sp.
- Reichenbachia (Brachygluta) hummleri*, Italy, p. 290, *fuchsi*, Dalmatia, p. 291, KRAUSS, Verh. Ges. Wien 1; *R. sursicauda*, Asia Minor, GANGLBAUER, p. 146, BODEMEYER (131) : n. spp.
- Rybaxis isidoreæ* (= *harti* Black.), p. 151, *recta* ♂, p. 154, pl. x, fig. 42, p. 154, RAFFRAY, P. Linn. Soc. N. S. Wales xxv.
- R. marquardti*, Buchara, REITTER, p. 50, Deutsche ent. Zeitschr. 1900; *R. antilope*, p. 155, pl. x, fig. 43, *grandis*, p. 156, *adumbrata*, p. 158, *quinquefoveolata*, p. 159, RAFFRAY, t. c. : n. spp.

- Spilorhombus* n. g. near *Didimoprora*, p. 225, for *S. hirtus*, n. sp., Swan River, p. 226, RAFFRAY, P. Linn. Soc. N. S. Wales xxv.  
*Tmesiphorus termitophilus*, Swan River, RAFFRAY, p. 215, t. c. n. sp.  
*Trichobythus* subg. n. cf. *Bythinus*.  
*Trimium zoufali*, Ancona, KRAUSS, p. 289, Verh. Ges. Wien l; *T. minimum*, Piedmont, DODERO, p. 405, Ann. Mus. Genova xl : n. spp.  
*Tyraphus rugicollis*, Australia, RAFFRAY, p. 207, P. Linn. Soc. N. S. Wales xxv, n. sp.  
*Tyromorphus nigricornis*, p. 228, *cribratus*, p. 229, *dispar*, p. 231, *lævis*, p. 232, Australia, RAFFRAY, t. c. n. spp.

# PAUSSIDÆ.

[Cf. BEDEL (87), GESTRO (499).]

- Catalogue of *Paussidæ*; 270 species, GESTRO, pp. 811–850, Ann. Mus. Genova xl.  
*Arthropterus senegalensis*, Africa, GESTRO, p. 820, t. c. n. sp.  
*Ceratoderus oberthurii*, Bombay, GESTRO, p. 823, t. c. n. sp.  
*Paussus cornutus* and allies, synonymy, BEDEL, p. 279, Bull. Soc. ent. France 1900.  
*P. aldrovandii*, Cape of Good Hope, *spinolæ*, p. 824, *tigrinus*, p. 825, Abyssinia, GESTRO, Ann. Mus. Genova xl; *P. sahara* (= *cornutus* Fairm. nec Chevr.), BEDEL, p. 278, Bull. Soc. ent. France 1900 : n. spp.  
*Pleuropterus taprobanensis*, Ceylon, p. 821, *cardonii*, Bengal, p. 822, GESTRO, Ann. Mus. Genova xl, n. spp.

# SCYDMENIDÆ.

- [Cf. CROISSANDEAU (296), FLEISCHER (424), GANGLBAUER (487), REITTER (1099, 1101).]  
 Completion of CROISSANDEAU's (296) monograph of European *Scydmenidæ*.  
*Diarthroconnus* subg. n. cf. *Euconnus*.  
*Euconnus* (*Tetramelus*) *scipio*, Broussa, REITTER, p. 81, Deutsche ent. Zeitschr. 1900; *E. (Diarthroconnus* subg. n.) for *E. birnbacheri*, Austria, GANGLBAUER, p. 261, Verh. Ges. Wien l : n. spp.  
*Neuraphes* (*Pararaphes*) *puncticeps*, Vallombrosa, FLEISCHER, p. 232, Wien. ent. Zeit. xix; *N. (Pararaphes) deubeli*, Austria, GANGLBAUER, p. 260, Verh. Ges. Wien l : n. spp.  
*Scydmcenus* (*Eumicrus*) *longipilis*, Buchara, REITTER, p. 50, Deutsche ent. Zeitschr. 1900, n. sp.

# SILPHIDÆ.

- [Cf. DODERO (335), ESCALERA (380), FAIRMAIRE (389), GANGLBAUER (131), KRAUSS (780), REITTER (1094, 1095), XAMBEU (1420).]  
*Agathidium sahlbergi*, Palestine, REITTER, p. 218, Wien. ent. Zeit. xix, n. sp.  
*Anemadus cribratostratus*, Asia Minor, GANGLBAUER, p. 147, BODEMEYER (131), n. sp.  
*Attumbra judea*, Bethlehem, REITTER, p. 217, t. c. n. sp.  
*Bathyscia*: habits; revision of Spanish, ESCALERA, An. Soc. Espan. xxviii, pp. 363–412; *B. sardeanensis* (= *delicata* Reitt.), *B. spagnoli* var. n. *brevipilis*, DODERO, p. 417, Ann. Mus. Genova xl.  
*B. subterranea*, Ancona, KRAUSS, p. 292, Verh. Ges. Wien l; *B. sharpi*, p. 382, *autumnalis*, p. 388, *bolivari*, p. 398, Spain, ESCALERA, An. Soc.



- Espan. xxxviii; *B. antrorum* with var. *brachycera*, p. 415, *solarii* p. 416, Italy, DODERO, Ann. Mus. Genova xl : n. spp.  
*Catops cholevoides*, p. 217, *sahlbergi*, p. 218, Transcaspian, REITTER, Wien. ent. Zeit. xix, n. spp.  
*Chobautiella* n. g. *Anisotomides*, p. 229, for *C. anisotomoides* Fairm., pl. ii, fig. 9, REITTER, t. c.  
*Liodes anisotomoides*, see *Trachyscelis anisotomoides*, *Tenebrionidæ*.  
*Necrophorus corsicus* varr. n. *vodozi*, *laportei*, MEIER, p. 218, Ent. Nachr. xxvi; *N. vestigator* var. n. *rauterbergi*, REITTER, p. 82, Deutsche ent. Zeitschr. 1900.  
*Silpha bicolor*, China, FAIRMAIRE, p. 616, Ann. Soc. ent. France lxviii, n. sp.

## TRICHOPTERYGIDÆ.

- P. B. MASON (870) has published a supplement by the late A. MATTHEWS to his monograph of Trichopterygidæ, including *Hydroscaphidæ*.  
*Pinella fauvelii*, New Zealand, MATTHEWS, p. 19, Trichopt. Suppl. n. sp.  
*Trichopteryx*; table of the species, MATTHEWS, t. c. pp. 38–46.  
*T. fuliginosa*, Mexico, MATTHEWS, p. 68, t. c. n. sp.

## SCAPHIDIIDÆ.

- Baeocera pallida*, *abdominalis*, *discolor*, *rubriventris*, N. America, CASEY, p. 58, J. N. York Ent. Soc. viii, n. spp.  
*Cyparium ater*, Texas, CASEY, p. 56, t. c. n. sp.  
*Scaphidium ornatum*, *amplum*, N. America, CASEY, p. 56, t. c. n. spp.  
*Scaphiomicrus* n. g., p. 58, for *Scaphisoma pusilla* Lec., and *S. dimidiatus*, *flavescens*, *lacustris*, *nugator*, p. 59, *exiguus*, p. 60, n. spp., N. America, CASEY, t. c.

## HISTERIDÆ.

- [Cf. BLACKBURN (125), FUENTE (475), LEWIS (29, 820, 821), MÜLLER (929), PEYERIMHOFF (996), REITTER (1101), THÉRY (1318), WASMANN (1377).]  
*Acritus nigricornis* and *seminulum* are sexes of *A. nigricornis*, MÜLLER, p. 301, Verh. Ges. Wien l.  
*Apobletes parallelus*, Sumatra, p. 268, *cavifrons*, Assam, *macilentus*, Sumatra, p. 269, *platessæ*, Usambara, p. 270, LEWIS, Ann. Nat. Hist. vi, n. spp.  
*Chlamydopsis pygidialis*, Victoria, BLACKBURN, p. 206, P. Soc. Victoria xii, n. sp.  
*Epiechnus marseuli*=(*hispidus* Mars. nec Payk.), LEWIS, p. 290, Ann. Nat. Hist. vi, n. sp.  
*Epiurus festivus* referred to *Phelister*, LEWIS, p. 227, Ann. Nat. Hist. v.  
*E. foederatus*, Australia, LEWIS, p. 251, t. c. n. sp.  
*Epitoxus* n. g. near *Phelister*, for *E. corycæus*, n. sp., Congo, LEWIS, op. cit. vi, p. 278.  
*Hister holubi*, p. 231, *sessilis*, p. 249, characters, LEWIS, op. cit. v; *H. sepulchralis* var. n. *impunctatus*, p. 138, characters of allies, p. 139, MÜLLER, Wien. ent. Zeit. xix.  
*H. montenegrinus*, Sarajevo, MÜLLER, p. 137, t. c.; *H. congonis*, Africa, p. 230, *sinuosus*, Texas, p. 231, *gibberosus*, Mexico, p. 232, *meridanus*, Yucatan, p. 233, *levimargo*, p. 246, *planimargo*, Costa Rica, *cinctipygus*, Siam, p. 247, *terræmotus*, Java, p. 248, *pinnulæ*, Borneo,

- vacillans*, Tenasserim, p. 250, LEWIS, Ann. Nat. Hist. v; *H. mombasanus*, p. 279, *zambesiensis*, *angoniensis*, p. 280, Africa, *brahminius*, Ceylon, p. 281, *frontalis*, Assam, p. 282, LEWIS, op. cit. vi : n. spp.
- Hololepta dyak*, Borneo, p. 266, *syntexis*, W. Africa, p. 267, LEWIS, t. c.; *H. malleata*, Christmas Is., LEWIS, p. 90, Mon. Christmas Island : n. spp.
- Homalopygus remex*, Paraguay, LEWIS, p. 285, pl. x, fig. 10, Ann. Nat. Hist. vi, n. sp.
- Liopygus chalcis*, Perak etc., LEWIS, p. 270, t. c. n. sp.
- Notocoelis* n. g. p. 283, near *Discoscelis*, for *N. satur*, n. sp., Paraguay, p. 284, pl. x, fig. 9, LEWIS, Ann. Nat. Hist. vi.
- Omalodes sinuaticollis*, characters, LEWIS, p. 230, op. cit. v.
- O. felix*, p. 228, *striatipectus*, p. 229, S. America, LEWIS, t. c. n. spp.
- Pachycrærus chlorites*, W. Africa, LEWIS, p. 274, op. cit. vi, n. sp.
- Phelister illustris*, p. 226, *chapadæ*, p. 227, Brazil, LEWIS, op. cit. v, n. spp.
- Placodes opacus*, Congo, LEWIS, p. 224, t. c. n. sp.
- Platylister mirabilis*, Khasia hills, LEWIS, p. 225, t. c.; *P. cathayi*, China, p. 271, *enodis*, New Guinea, p. 272, LEWIS, op. cit. vi : n. spp.
- Platysoma assamense*, Khasia hills, *disparile*, Lombok, LEWIS, p. 273, t. c.; *P. lignarium*, Christmas Is., LEWIS, p. 91, Mon. Christmas Island; *P. sulcisternum*, Australia, LEWIS, p. 226, Ann. Nat. Hist. v : n. spp.
- Probolosternus* n. g. near *Pachycrærus*, for *P. africanus*, p. 275, *permundus*, p. 276, pl. x, fig. 4, *minor*, p. 277, n. spp., W. Africa, LEWIS, op. cit. vi.
- Saprinus immundus* is a var. of *S. æneus*, *S. pulcherrimus*, var. n. *similis*, MÜLLER, p. 141, Wien. ent. Zeit. xix; *S. castanipes* Curt. = (*fulvo-pteris* Mars., *bisignatus* Er. = (*matthewsi* Curt.), *connectens* Payk. = (*furcatus* Curt.), LEWIS, p. 288, Ann. Nat. Hist. vi.
- S. navasi*, Spain, FUENTE, p. 188, Act. Soc. Espan. 1900; *S. punctisternus*, China, p. 287, *læsus*, Ecuador, p. 288, LEWIS, Ann. Nat. Hist. vi; *S. amethystinus*, Queensland, LEWIS, p. 253, op. cit. v : n. spp.
- Sitalia* n. g. for *Paratropus severini* Lew., figured, p. 285, LEWIS, op. cit. vi.
- Spathocus coyei*, myrmecophilous habits, PIC, p. 171, Bull. Soc. ent. France 1900.
- Sternocelis ovalis*, Algeria, LEWIS, p. 252, Ann. Nat. Hist. v, n. sp.
- Stictostix parra*, figure, LEWIS, p. 283, op. cit. vi.
- Terapus muricatus*, Paraguay, LEWIS, p. 286, pl. x, fig. 12, t. c. n. sp.
- Teratosoma longipes*, habits and characters, WASMANN, pp. 250–254, pl. xiv, fig. 17, Zool. Jahrb. Syst. xiv.
- Teretrius acaciæ*, Tunis, REITTER, p. 83, Deutsche ent. Zeitschr. 1900; *T. braganzæ*, W. Africa, LEWIS, p. 289, Ann. Nat. Hist. vi : n. spp.
- Tribalus amnicola*, Mashonaland, LEWIS, p. 252, op. cit. v, n. sp.
- Xenonychus bidens*, Biskra, PEYERIMKOFF, p. 202, Bull. Soc. ent. France 1900; *X. chobauti*, Algeria, THÉRY, p. 32, t. c. : n. spp.

## NITIDULIDÆ and MONOTOMIDÆ.

[Cf. ARROW (36), GROUVELLE (540), REITTER (1095, 1099), SHARP (511).]

- Amartus appli*, Beirout, GANGLBAUER, p. 147, BODEMEYER (131), n. sp.
- Aneuropus* n. g. for *A. championi*, n. sp., Guatemala, SHARP, p. 573, pl. xviii, fig. 4, Biol. Centr. Amer. Col. ii, pt. i.
- Bactridium divisum*, p. 574, *brevicorne*, *crassum*, p. 575, *angustum*, *flohri*, *rude*, pl. xviii, fig. 5, p. 576, *eumorphum*, fig. 6, *germanum*, p. 577, Centr. America, SHARP, t. c., n. spp.
- Carpophilus (Nitops) weyersi*, Sumatra, GROUVELLE, p. 262, Ann. Soc. ent. Belgique xlv, n. sp.

- Cybocephalus aurocupreus*, Transcaspian, REITTER, p. 219, Wien. ent. Zeit. xix, n. sp.
- Europs diffusus*, p. 567, *bilineatus*, *cognatus*, *illæsus*, p. 568, *obtusius*, *oxytelus*, pl. xviii, fig. 2, p. 569, *simplex*, *euplectoides*, *pumilio*, p. 570, *nanus*, *longulus*, fig. 3, p. 571, *convergens*, *luridipennis*, *discedens*, p. 572, Centr. America, SHARP, Biol. Centr. Amer. Col. ii, pt. i, n. spp.
- Hesperobænus stipes*, Guatemala, SHARP, p. 566, pl. xviii, fig. 1, t. c. n. sp.
- Heterhelus corpulentus*, Irkutsk, REITTER, p. 231, pl. ii, fig. 7, Wien. ent. Zeit. xix, n. sp.
- Meligethes explanatus*, Buchara, REITTER, p. 52, Deutsche ent. Zeitschr. 1900, n. sp.
- Monotoma centralis*, *munda*, p. 564, *pusilla*, p. 565, Centr. America, SHARP, Biol. Centr. Amer. Col. ii, pt. i, n. spp.
- Narcisa decidua* var. n. *nigricornis*, HELLER, p. 7, Abh. Mus. Dresden ix, No. 5.
- Phyconomus subtestaceus* Reitt. referred to *Hesperobænus*, SHARP, p. 565, Biol. Centr. Amer. Col. ii, pt. i.
- Stelidota orientalis*, Christmas Is., ARROW, p. 92, Mon. Christmas Island, n. sp.
- Tisiphone chontalenus*, pl. xviii, fig. 7, p. 578, *mexicanus*, *distans*, p. 579, Centr. America, SHARP, Biol. Centr. Amer. Col. ii, pt. i, n. spp.

## TROGOSITIDÆ or TEMNOCHILIDÆ.

[Cf. ARROW (36), BEDEL (89), FAIRMAIRE (389, 395), LÉVEILLÉ (540, 818, 819).]

- Catalogue of the *Trogositidæ* of the world, 476 species, LÉVEILLÉ, pp. 1–26, Ann. Soc. ent. France lxix.
- LÉVEILLÉ gives longer descriptions of the species diagnosed by him last year, op. cit. lxviii, pp. 646–653.
- Acrops weyersi*, Sumatra, LÉVEILLÉ, p. 263, Ann. Soc. ent. Belgique xlv, n. sp.
- Airora decipiens*, Mexico, LÉVEILLÉ, p. 644, Ann. Soc. ent. France lxviii, n. sp.
- Alindria grandis* Serv. and *Trogosita cylindrica* Ol., note on, LÉVEILLÉ, p. 657, t. c.
- Gaurambe minor*, Madagascar, FAIRMAIRE, p. 135, Bull. Soc. ent. France 1900, n. sp.
- Leperina turbata* Pasc. = (*fasciculata* Reitt.), *L. lacera* Pasc. = (*signoreti* Reitt. nec Montr.), LÉVEILLÉ, p. 657, t. c.
- Marnia grouvellei*, Brazil, LÉVEILLÉ, p. 644, t. c. n. sp.
- Nemosoma elongatum* var. *tuniseum*, PIC, p. 61, Echange xvi.
- N. brasiliense*, Jatahy, LÉVEILLÉ, p. 644, Ann. Soc. ent. France lxviii, n. sp.
- Nemozomia picta* var. n. *bipunctata*, LÉVEILLÉ, p. 653, t. c.
- Oniscomorpha* n. g. near *Narcisa*, p. 93, for *O. marmorata*, n. sp., Christmas Is., p. 94, pl. x, fig. 2, ARROW, Mon. Christmas Island.
- Shoguna polita*, p. 92, *striata*, p. 93, Christmas Is., ARROW, t. c. n. spp.
- Temnochila gemella*, Algeria, BEDEL, p. 335, Bull. Soc. ent. France 1900 ; *T. polygonalis*, Brazil, LÉVEILLÉ, p. 654, Ann. Soc. ent. France lxviii : n. spp.
- Tenebroides fossulatus*, Bolivia, *brevis*, Brazil, LÉVEILLÉ, p. 645, t. c. ; *T. delicatus*, p. 655, *subruber*, p. 656, Brazil, LÉVEILLÉ, t. c. : n. spp.
- Thymalus chinensis*, China, FAIRMAIRE, p. 616, t. c. n. sp.

## COLYDIIDÆ (incl. DISCOLOMIDÆ).

[Cf. ARROW (36), GROUVELLE (539, 540), SHARP (1212).]

*Discolomidæ*; this so-called family not valid, SHARP, p. 193, Rev. Ent. franc. xix.*Bothrideres strigatus*, Christmas Is., ARROW, p. 94, pl. x, fig. 3, Mon. Christmas Island, n. sp.*Hyberis simplex*, Sumatra, GROUVELLE, p. 265, Ann. Soc. ent. Belgique xlv, n. sp.*Lascotonus frater*, Sumatra, GROUVELLE, p. 265, t. c. n. sp.*Pseudososylus* n. g. between *Colydiini* and *Deretaphrini*, for *P. colydioides* n. sp. Congo, GROUVELLE, p. 424, t. c.

## CUCUJIDÆ.

*Silvanus consors*, pl. xvii, fig. 26, p. 561, *perforatus*, fig. 27, p. 562, Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i, n. spp.*Tristaria africana*, Congo, GROUVELLE, p. 424, Ann. Soc. ent. Belgique xlv, n. sp.

## CRYPTOPHAGIDÆ.

[Cf. CASEY (229), GROUVELLE (540), SHARP (511).]

*Agathengis subnitens*, p. 109, *carinula*, *pumilio*, *patens*, *crassula*, p. 110, *capitata*, *quadricollis*, *constricta*, *tenebrosa*, p. 111, *coloradensis*, *stricticollis*, *lucida*, *luculenta*, p. 112, *forticornis*, *macer*, *ochronitens*, *undulata*, p. 113, *melas*, *soror*, *cribripennis*, p. 114, *dispersa*, *puella*, *castanea*, p. 115, *parvicollis*, *subrecta*, p. 116, *nigricollis*, *longipennis*, *subdentata*, p. 117, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.*Anchorius* n. g. *Biphyllini*, p. 79, for *A. lineatus*, n. sp., Arizona, p. 80, CASEY, t. c.*Anepsicus* n. g. for *A. brunneus* n. sp., Mexico, pl. xviii, fig. 19, SHARP, p. 600, Biol. Centr.-Amer. Col. ii, pt. i.*Antherophagus pallidivestis*, Utah, CASEY, p. 89, J. N. York Ent. Soc. viii, n. sp.*Atomaria nubipennis*, *postpallens*, p. 119, *distincta*, *divisa*, *gilvipennis*, p. 120, *saginata*, p. 121, *curtula*, *gonodera*, *riparia*, *subalutacea*, p. 122, *incerta*, *brevicollis*, *aleutica*, p. 123, *oblongula*, *crypta*, *fallax*, p. 124, *ovalis*, *inepta*, *nanula*, p. 125, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.*Cenoscelis optata*, Guatemala, SHARP, p. 603, Biol. Centr.-Amer. Col. ii, pt. i; *C. ochreosa*, *parallela*, *angusticollis*, p. 105, *shastanica*, *macilentata*, *basalis*, p. 106, *ovipennis*, *macra*, *elongata*, *obscura*, *subfuscata*, p. 107, N. America, CASEY, J. N. York Ent. Soc. vi : n. spp.*Cissocryptus* n. g. for *C. insolitus* n. sp., Mexico, pl. xviii, fig. 20, SHARP, p. 601, Biol. Centr.-Amer. Col. ii, pt. i.*Celocryptus* n. g. p. 593, for *C. mexicanus*, *cognatus*, *pallens*, p. 594, *discedens*, pl. xviii, fig. 14, p. 595, n. spp., Centr. America, SHARP, t. c.*Crosimus* n. g. near *Cryptophagus*, p. 89, for *C. obesulus*, *hirtus*, n. spp., N. America, p. 90, CASEY, J. N. York Ent. Soc. viii.*Cryptophagus confertus*, *nodifer*, *parvinoda*, p. 94, *infuscatus*, *plectrum*, *cicatricosus*, *politus*, *difficilis*, p. 95, *plenus*, *amputatus*, *laticlavus*, p. 96, *inscitus*, *cribricollis*, *brevipilis*, *lepidus*, p. 97, *depressulus*, *porrectus*, *antennatus*, *valens*, p. 98, *histicus*, *discedens*, *fumidulus*, p. 99, *hebes*, *lyraticollis*, *otiosus*, p. 100, N. America, CASEY, t. c. n. spp.



- Curelius* n. g. for *Ephistemus dilutus* Reitt., *exiguus* Er., CASEY, p. 127, t. c.
- Diphyllus micros*, Sumatra, GROUVELLE, p. 266, Ann. Soc. ent. Belgique xlv, n. sp.
- Diplocelus bicolor*, p. 621, *parvus*, pl. xviii, fig. 24, p. 622, Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i, n. spp.
- Empocryptus* n. g. for *E. ovalis*, pl. xviii, fig. 13, n. sp., Guatemala, SHARP, t. c.
- Ephistemus reitteri*, Caucasus, CASEY, p. 128, J. N. York Ent. Soc. viii; *E. distans*, Guatemala, SHARP, p. 603, Biol. Centr.-Amer. Col. ii, pt. i : n. spp.
- Euderopus* n. g. *Biphyllinae*, for *E. brevipes*, p. 622, *perbrevis*, *microps*, *unicolor*, p. 623, *iteratus*, *regularis*, *setosus*, p. 624, n. spp., Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i.
- Gonicocelus* n. g. *Biphyllinae*, p. 604, for *G. unicornis*, pl. xviii, fig. 22, *tricornis*, p. 605, *relictus*, *rudis*, *germanus*, p. 606, *brevicollis*, *mexicanus*, p. 607, *celatus*, *hirtus*, p. 608, *cultratus*, *longicornis*, p. 609, *mediocris*, *parnoides*, pl. xviii, fig. 23, p. 610, *latus*, *guatemalensis*, *vestitus*, p. 611, *securiger*, *hystrix*, p. 612, *championi*, *throscoides*, *subtilis*, p. 613, *choutalenus*, *planus*, p. 614, *crispatus*, *angustus*, p. 615, *bimargo*, *spheniscus*, *humilis*, p. 616, *laticollis*, *arduus*, p. 617, *muticus*, *concolor*, *segnis*, p. 618, *monticola*, *opsis*, p. 619, *sellatus*, *deplanatus*, p. 620, *mollis*, p. 621, Centr. America, n. spp., SHARP, t. c.
- Henoticus monticola*, *compactus*, p. 597, *loberinus*, pl. xviii, fig. 16, p. 598, Centr. America, SHARP, t. c. n. spp.
- Holosternus* n. g., p. 599, for *H. distans* n. sp., Guatemala, pl. xviii, fig. 18, p. 600, SHARP, t. c.
- Loberus chiriquensis*, *guatemalensis*, *sellatus*, p. 582, *cryptophagus*, *pallidus*, *suturalis*, p. 583, *brevicollis*, pl. xviii, fig. 9, *longulus*, *lateralis*, p. 584, *marginalis*, p. 585, Centr. America, SHARP, t. c.; *L. subglaber*, New Jersey, *imbellis*, Florida, *insularis*, Cuba, Bahamas, *puberulus*, Mexico, CASEY, p. 83, J. N. York Ent. Soc. viii : n. spp.
- Othniocryptus* n. g., p. 598, for *O. variegatus* n. sp., Panama, pl. xviii, fig. 17, p. 599, SHARP, Biol. Centr.-Amer. Col. ii, pt. i.
- Platoberus* n. g. for *P. latus*, pl. xviii, fig. 10, *rotundus*, p. 586, *robustus*, *divisus*, p. 587, n. spp., Central America, SHARP, t. c.
- Pseudhenoticus* n. g. for *P. parallelus* n. sp. pl. xviii, fig. 15, Guatemala, SHARP, p. 596, t. c.
- Pteryngium malacum*, N. America, CASEY, p. 102, J. N. York Ent. Soc. viii, n. sp.
- Salebius* n. g. near *Cryptophagus*, for *S. 6-dentatus*, p. 90, *minax*, *lictor*, *montanus*, *tarsalis*, p. 91, n. spp., N. America, CASEY, t. c.
- Telmatoscius* n. g. near *Loberus*, for *T. claviger* n. sp., Mexico, pl. xviii, fig. 8, p. 581, SHARP, Biol. Centr.-Amer. Col. ii, pt. i.
- Tisactia* n. g. near *Atomaria*, for *T. subglabra*, n. sp., Indiana, CASEY, p. 126, J. N. York Ent. Soc. viii.
- Tomarus obsoletus*, Arizona, CASEY, p. 85, t. c.; *T. niger*, p. 587, *debilis*, pl. xviii, fig. 11, *pubescens*, *lateralis*, p. 588, *pictipennis*, *atomarius*, p. 589, *picticornis*, *discoideus*, *confertus*, p. 590, *latipennis*, *abjectus*, p. 591, *heterocerus*, fig. 12, *lentus*, p. 592, Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i : n. spp.
- Trogocryptus* n. g. for *T. nigripes* n. sp., Guatemala, pl. xviii, fig. 21, SHARP, p. 602, t. c.

## LATHRIDIIDÆ.

Recent classifications discussed and compared, the genera annotated, the supplementary species catalogued with synonymy, BELON (92A).

Descriptions of S. African *Lathridiidae*, BELON (93).

*Anommatus*; characters of species, REITTER, p. 12, Wien. ent. Zeit. xix;

*A. distinctus* Dod. (below) referred to *Abromus*, REITTER, p. 242, t. c.

*A. plicatus* var. n. *dictyoderus*, DODERO, p. 419, Ann. Mus. Genova xl.

*A. distinctus*, San Remo, with var. *devillei*, Alpes maritimes, DODERO, p. 418, t. c. n. sp.

### MYCETOPHAGIDÆ.

[Cf. CASEY (229), GROUVELLE (540), XAMBEU (1420).]

*Alitargus* subg. n. See *Litargus*.

*Berginus*: not *Mycetophagid*, to be placed near *Lyctus*, CASEY, p. 129, J. N. York Ent. Soc. viii.

*B. bahamicus*, Eleuthera, id. l. c. n. sp.

*Gratusus* subg. n., cf. *Tritoma*.

*Ilendus* subg. n., cf. *Tritoma*.

*Litargellus* subg. n., see *Litargus*.

*Litargus*; N. American tabulated with *Tilargus* subg. n. for *L. 4-spilotus*, *Paralitargus* subg. n. for *L. didesmus*, *Alitargus* subg. n. for *L. balteatus* Lec., *Litargellus* subg. n. for *L. nebulosus* Lec., CASEY, pp. 135, 136, J. N. York Ent. Soc. viii.

*L. weyersi*, *latus*, Sumatra, GROUVELLE, p. 267, Ann. Soc. ent. Belgique xlv; *L. (Paralitargus) asperulus*, Dakota, CASEY, p. 136, J. N. York Ent. Soc. viii : n. spp.

*Paralitargus* subg. n., see *Litargus*.

*Parilendus* subg. n., cf. *Tritoma*.

*Thrimolus* n. g. ? near *Typhæa*, for *T. minutus* n. sp., Texas, CASEY, p. 137, J. N. York Ent. Soc. viii.

*Tilargus* subg. n., see *Litargus*.

*Tritoma*; N. American species tabulated, with following new subgenera, *Ilendus* for *T. melsheimeri* and allies, *Parilendus* for *T. bipustulata* etc., *Gratusus* for *T. pluriguttatus* etc., CASEY, pp. 131-134, J. N. York Ent. Soc. viii.

*Tritoma serrulata*, *picta*, *subdepressa*, p. 132, *T. (Gratusus) notatula*, p. 134, N. America, CASEY, l. c. n. spp.

### DERMESTIDÆ.

[Cf. CASEY (229), GANGLBAUER (131), PIC (1024), REITTER (1094).]

Study of N. American *Dermestidae*, CASEY, J. N. York Ent. Soc. viii.

*Anthrenus*; larval habits, POJUADÉ, p. 169, Bull. Soc. ent. France 1900; *Anthrenus*; see also *Nathrenus*.

*A. occidens*, p. 160, *parvus*, p. 161, *rotundulus*, p. 162, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.

*Attagenus extricatus*, *deficiens*, p. 146, *elongatulus*, p. 147, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.

*Cryptorhopalum filitarse*, *reversum*, *pruddeni*, *festivum*, p. 156, *dorcato-moides*, *obesulum*, *granum*, *anthrax*, *affine*, p. 157, *modestum*, *fusciclave*, *pumilum*, p. 158, N. America, CASEY, t. c. n. spp.

*Dermestes undulatus*, early stages, XAMBEU, p. 143, Naturaliste xxii.

*D. medialis*, California, p. 141, *angustus*, Texas, p. 143, CASEY, J. N. York Ent. Soc. viii : n. spp.

*Globicornis marginata*, habits, FORMANEK, p. 78, Wien. ent. Zeit. xix.

*G. (Hadrotoma) varulogeri*, Tunis, PIC, p. 53, Echange xvi, n. sp.

*Hadrotoma (Pseudomesalia* subg. n.) *bodemeyeri*, Asia Minor, GANGLBAUER, p. 148, BODEMEYER (131), n. sp.

- Nathrenus* subg. n. of *Anthrenus* for *A. verbasci* L., CASEY, p. 161, J. N. York Ent. Soc. viii.
- Novelsis* n. g. (with subg. n. *Paronovelsis* for *Attagenus varicolor* Jayne) for part of *Attagenus*, with *N. byturoides*, *utecana*, p. 148, *picta*, p. 149, n. spp., N. America, CASEY, t. c.
- Orphilus chalybeus*, Idaho, CASEY, p. 164, t. c. n. sp.
- Paranovelsis* subg. n., see *Novelsis*.
- Perimegatoma jaynei*, *guadelupensis*, *ampla*, *nevadica*, *impressa*, p. 150, *monticola*, p. 151, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.
- Trogoderma dickroa*, Turkestan, REITTER, p. 219, Wien. ent. Zeit. xix; *T. serriger*, *pollens*, *complex*, *variipes*, *simulans*, p. 153, *virginica*, *oblongula*, *aspericollis*, *brevis*, *obsolescens*, *advena*, p. 154, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.
- Pseudomesalia* subg. n., cf. *Hadrotoma*.

## BYRRHIDÆ.

- Larva of *Byrrhus fasciatus*, KINCAID, p. 372, pl. xxiv, P. Washington Ac. ii.
- Porcinolus murinus*, varieties, FLEISCHER, p. 179, Wien. ent. Zeit. xix.
- Simplocaria brevistriata*, Spain, REITTER, p. 83, Deutsche ent. Zeitschr. 1900, n. sp.

## PARNIDÆ.

- [Cf. ABEILLE & GROUVELLE (4), GROUVELLE (539, 540), WATERHOUSE (1383).]
- Esolus galloprovincialis*, France, ABEILLE, p. 137, Bull. Soc. ent. France 1900, n. sp.
- Normandia* n. g. for *Limnius villosocostatus* Reiche, PIC, p. 266, Bull. Soc. ent. France 1900.
- Parygrus whiteheadi*, Hainan Is., WATERHOUSE, p. 310, Ann. Nat. Hist. v, n. sp.
- Riolus meridionalis*, Montpellier, GROUVELLE, p. 137, Bull. Soc. ent. France 1900, n. sp.
- Stenelmis clavareau*, Congo, GROUVELLE, p. 425, Ann. Soc. ent. Belgique xlv; *S. weyersi*, Sumatra, GROUVELLE, p. 268, op. cit. xlv : n. spp.

## HETEROCERIDÆ.

- [Cf. GAHAN (478), REITTER (1095), SAHLBERG (1143).]
- Heterocerus* (*Micromichilus* subg. n.) *minutissimus*, Amu Daria, p. 205, *H. niloticus*, Cairo, p. 206, *ahengeri*, Transcaspian, p. 207, SAHLBERG, Ofv. Finska Forh. xlii; *H. kulabensis*, Bucharra, REITTER, p. 227, pl. ii, fig. 2, Wien. ent. Zeit. xix : n. spp.
- Micromichilus* subg. n., cf. *Heterocerus*.

## LUCANIDÆ.

- [Cf. BORDAS (144), GAHAN (29), HELLER (573), JAKOWLEFF (649, 650), PLANET (1039, 1040), SHARP (1208).]
- Larvæ of *Pholidotus*, *Sclerostomus* etc., OHAUS, p. 223 etc., Ent. Zeit. Stettin lxi.

- Ægus specularis*, Cochin China, p. 633, *hamatus*, Borneo, p. 635, *planeti*, New Guinea, p. 637, JAKOWLEFF, Horæ Soc. ent. Ross. xxxiv; *Æ. sculpticollis*, p. 8, pl. fig. 9, *punctithorax*, p. 9, fig. 8, Celebes, HELLER, Abh. Mus. Dresden ix, No. 5 : n. spp.
- Auxicerus æthiops*, Bolivia, JAKOWLEFF, p. 38, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Eurytrachelus intermedius*, mandibular developments, SHARP in Willey's Results iv, p. 382, pl. xxxv, figg. 3a-d.
- Figulus rossi*, Christmas Is., GAHAN, p. 96, Mon. Christmas Island, n. sp.
- Hemisodorscus semenowi*, Setschuen, JAKOWLEFF, p. 36, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Leptinopterus elegans*, Brazil, JAKOWLEFF, p. 632, t. c. n. sp.
- Lucanus* and *Pseudolucanus*; monograph continued, PLANET, Naturaliste xxii, pp. 46 etc.; *L. cervus*, note on habits, PIC, p. 108, Bull. Soc. ent. France 1900.
- L. singularis* ♀, E. India ?, PLANET, Naturaliste xxii, p. 11, n. sp.
- Nigidius taurus*, Philippines, JAKOWLEFF, p. 640, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Parægus listeri*, pl. xi, figg. 1, 2, p. 96, GAHAN, Mon. Christmas Island, n. sp.
- Pseudægus* n. g., p. 7, for *P. leptodon* n. sp., Celebes, p. 8, pl. fig. 10, HELLER, Abh. Mus. Dresden ix, No. 5.
- Pseudolucanus mnizechi*, E. India, PLANET, p. 96, Naturaliste xxii, n. sp.

## PASSALIDÆ.

[Cf. BLACKBURN (125), GAHAN (478), HELLER (573), OHAUS (956).]

Stridulatory organs : Larvæ of *Passalidæ*, habits, relations to parents etc., OHAUS (956, pp. 164 etc.)

*Gnaphalocnemis* n. n. for *Eriocnemis* Kaup., HELLER, p. 10, Abh. Mus. Dresden ix, No. 5.

*Mastochilus* : the Australian species, BLACKBURN, pp. 207-209, P. Soc. Victoria xii.

*M. capitalis*, N. S. Wales, id. p. 209, t. c. n. sp.

*Plesthenus mandibularis*, Celebes, HELLER, p. 11, pl. fig. 5, Abh. Mus. Dresden ix, No. 5, n. sp.

## SCARABÆIDÆ.

[The following memoirs relate to *Scarabæidæ*, viz. :—ARROW (35, 36), BLACKBURN (123, 124, 125), BORDAS (144), BRAUNS (171), BRENSKE (177 to 182, 131, 574), CHAMPENOIS (234), CLOUËT DES PESRUCHES (260 to 262), FAIRMAIRE (389, 391), GAHAN (478), GESTRO (494), HELLER (573), KOLBE (747, 748, 751), KRAATZ (772), OHAUS (954-956), OLSOUFIEW (962), D'ORBIGNY (963), PIC (1036), RABES (1067), REITTER (1092, 1099, 1101), SEMENOW (1193, 1194), SHARP (1208), TARNANI (1305), XAMBEU (1420); see also *Cetoniini*, p. 144.]

Larvæ and larval habits of various Lamellicorns, specially of *Rutelides*, OHAUS (956).

Stridulating organs, GAHAN (478).

*Coprini*.

*Aphodius moscoviticus*, Russia, SEMENOW, p. 91, Horæ Soc. ent. Ross. xxxiv; *A. (Orodaliscus* subg. n.) *rotundangulus*, Russia, REITTER, p. 84, Deutsche ent. Zeitschr. 1900; *A. (Bodilus) holdereri*, p. 155,



- A. (Plagiogonus) culminarius*, p. 156, *A. (Agrilinus) virginalis*, *A. (Volinus) bistriga*, p. 157, *forsteri*, p. 158, pl. i, fig. 2, Chinese centr. Asia, REITTER, Wien. ent. Zeit. xix : n. spp.
- Cephalodesmus minor*, N. S. Wales, BLACKBURN, p. 36, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Cheironitis socotranus*, Sokotra, GAHAN, p. 10, Bull. Liverp. Mus. iii, n. sp.
- Corythoderus marshalli*, S. Africa, BRAUNS, p. 164, pl. ix, Ann. Hofmus. Wien xv, n. sp.
- Epilissus* ; habits, CLOUËT, p. 123, Bull. Soc. ent. France 1900.
- Gymnopleurus levis*, Somaliland, ARROW, p. 23, P. Zool. Soc. London 1900, n. sp.
- Labroma horrens*, characters, BLACKBURN, p. 37, Tr. R. Soc. S. Austral. xxiv.
- Lethrus dinotherium litvinovi*, subsp. n., SEMENOW, p. 308, Horæ Soc. ent. Ross. xxxiv ; *L. apterus*, habits etc., TARNANI (1305) ; *L. apterus*, notes on, TARNANI, p. 49, Illustr. Zeitschr. Ent. v.
- Ochodæus inscutellaris*, Palestine, PIC, Frelon viii, sep. pag. p. 6 ; *O. euvinus*, Tauria, SEMENOW, p. 93, Horæ Soc. ent. Ross. xxxiv : n. spp.
- Odontoderus* n. g. for *Atenius spinicollis* Har. and *O. gestroi*, p. 249, *obertkuri*, p. 250, n. spp., W. Africa, CLOUËT, Ann. Soc. ent. Belgique xlv.
- Onthophagides* : D'ORBIGNY publishes a supplement to his palæarctic synopsis, with numerous remarks on localities & synonymy, Abeille xxix, pp. 289-300.
- Onthophagus orcas* = (*felschei* Reitt.), p. 273, *tricuspis* and *lemuroides* distinguished, p. 274, OLSOUFLEW, Annuaire Mus. St. Petersb. v.
- O. tricuspis*, Caucasus, SEMENOW, p. 94, Horæ Soc. ent. Ross. xxxiv ; *O. pentaceros*, p. 266, *d'orbignyi*, p. 268, Persia, *hypertropis*, Marghelan, p. 269, *persianus*, Persia, p. 270, [cf. also *Tauronthophagus*], OLSOUFLEW, Annuaire Mus. St. Petersb. v : n. spp.
- Orodaliscus* subg. n. cf. *Aphodius*.
- Panelus arthuri*, Australia, BLACKBURN, p. 211, P. Soc. Victoria xii, n. sp.
- Platyphymatia squalidus* ♀, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xxiv.
- Psammobius gestroi*, Burma, CLOUËT, p. 13, Ann. Soc. ent. Belgique xlv, n. sp.
- Rhyssomorphus* n. g. near *Rhyssenus*, for *R. mocquersyi* n. sp., Madagascar, FAIRMAIRE, p. 122, Bull. Soc. ent. France 1900, n. sp.
- Sicardia psammodiiformis*, redescribed, CLOUËT, p. 14, Ann. Soc. ent. Belgique xlv.
- Tauronthophagus kachowskyi*, Somaliland, OLSOUFLEW, Annuaire Mus. St. Petersb. v, n. sp.
- Trox expansus*, Somaliland, ARROW, p. 22, pl. 1, fig. 16, P. Zool. Soc. London 1900, n. sp.

### *Glaphyrini.*

- Amphicoma vulpes*, var. n. *mixta*, BRANCSIK, p. 99, Jahresh. Ver. Trencsen. xxi.
- A. (Eulasia) speciosa*, Syria, Persia, CHAMPENOIS, p. 248, Bull. Soc. ent. France 1900 ; *A. belia*, Buchara, REITTER, p. 53, Deutsche ent. Zeitschr. 1900 : n. spp.
- Arrhephora* ; is the ♀ of *Toxocerus*, FAIRMAIRE, p. 618, Ann. Soc. ent. France lxviii.

*Toxocerus latouchi*, China, FAIRMAIRE, p. 617, Ann. Soc. ent. France lxxviii, n. sp.

*Melolonthini.*

BRENSKE (177) continues his monograph of *Serica*.

The African genera of *Sericides*, tabulation, with new genera and division into two tribes, *Sericinæ*, *Trochalinæ*, BRENSKE, Berlin. ent. Zeitschr. xlv, pp. 71-82.

The *Melolonthidæ* of Ceylon, BRENSKE (178).

*Anacheirotus* n. g. *Sericoidarum*, p. 39, for *A. inornatus*, n. sp., S. Australia, p. 40, BLACKBURN, Tr. R. Soc. S. Austral. xxiv.

*Apogonia rauca* var. n. *unistriata*, *A. comosa* var. n. *ludificans*, BRENSKE, p. 348, Ent. Zeit. Stettin lxi; *A. destructor*, natural history, ZEHNTER (1426).

*A. nodosa*, with var. *geniculata*, Sumatra, BRENSKE, p. 146, Mem. Soc. ent. Belgique vii, n. sp.

*Autoserica stupida*, Madagascar, BRENSKE, p. 52, Berlin. ent. Zeitschr. 1900; *A. prabangana*, *eluctabilis*, p. 414, *eclogaria*, *atavana*, p. 415, Cambodia, BRENSKE, Bull. Mus. Paris 1899; *A. weligamana*, Ceylon, BRENSKE, p. 346, Ent. Zeit. Stettin lxi : n. spp.

*A. weyersi*, Sumatra, BRENSKE, p. 142, Mem. Soc. ent. Belgique vii : n. spp.

*Brahmina brahmsi*, Nanshan, REITTER, p. 158, Wien. ent. Zeitschr. xix, n. sp.

*Charioserica* n. g. for *C. striata*, n. sp., Madagascar, BRENSKE, p. 47, Berlin. ent. Zeitschr. xlv.

*Comaserica hildebrandti*, *bergrothi*, p. 39, *mocquersyi*, p. 41, *discolor*, p. 42, *aurita*, p. 43, *foveicollis*, p. 44, Madagascar, BRENSKE, t. c. n. spp.

*Cyphoserica* n. g. for *C. mukengeana*, n. sp. Africa, BRENSKE, p. 85, t. c.

*Delphinobius* n. g. near *Hoplia* for *D. cotta* n. sp. Madagascar, FAIRMAIRE, p. 241, Ann. Soc. ent. Belgique xlv.

*Ectinophia latesuturata*, *guttaticollis*, China, FAIRMAIRE, p. 620, Ann. Soc. ent. France lxxviii, n. spp.

*Eriphoserica* n. g. p. 62, for *E. camentoides*, n. sp. Madagascar, p. 63, BRENSKE, Berlin. ent. Zeitschr. xlv.

*Euphoresia* n. g. *Sericinæ*, p. 86, with *E. buttneri*, p. 88, *pygialis*, p. 89, *benitoensis*, p. 90, *multipunctata*, p. 91, *metasternalis*, p. 92, *seminionis*, p. 93, *kossowana*, *candezei*, p. 96, Africa, n. spp., BRENSKE, t. c.

*Glaphyserica* n. g. p. 52, for *G. humeralis*, n. sp. Madagascar, p. 53, BRENSKE, t. c.

*Glycyserica* n. g. p. 48, for *G. depravata*, n. sp. Madagascar, p. 49, BRENSKE, t. c.

*Heteronyx unicus*, S. Australia, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xxiv; *H. grandis*, Victoria, BLACKBURN, p. 113, t. c. : n. spp.

*Heteroserica* n. g. for *H. paradoxa*, n. sp. Madagascar, BRENSKE, p. 64, Berlin. ent. Zeitschr. 1900.

*Holotrichia moffartsi*, p. 148, *weyersi*, *deliana*, p. 149, Sumatra, BRENSKE, Mem. Soc. ent. Belgique vii; *H. pretiosa*, Amboina, BRENSKE, p. 624, Semon Forschungsreise, v : n. spp.

*Hoplia amena*, Sumatra, BRENSKE, p. 142, Mem. Soc. ent. Belgique vii, n. sp.

*Hoplosternus*, species grouped, BRENSKE, p. 154, t. c.

*H. weyersi*, Sumatra, id. p. 152, t. c. n. sp.

*Lachnosterna patens*, p. 175, *latens*, p. 176, St. Vincent, *trinitatis*, Trinidad, p. 182, ARROW, Tr. ent. Soc. London 1900, n. spp.

*Lasiopsis koltzei*, Turkestan, REITTER, p. 52, Deutsche ent. Zeitschr. 1900, n. sp.

- Lepidiota oblonga*, Thursday Island, p. 622, *semonis*, *maculata*, New Guinea, *crinita*, Queensland, p. 623, BRENSKE, Semon Forschungsreisen v, n. spp.
- Leucopholis horni*, Ceylon, BRENSKE, p. 355, Ent. Zeit. Stettin lxi, n. sp.
- Listronyx antarcticus*, p. 109, *hirsutus*, p. 110, Patagonia, BRENSKE, Ann. Soc. ent. Belgique xlv, n. spp.
- Melolontha vulgaris* var. n. *asiatica*, BRENSKE, p. 151, BODEMEYER (131).
- Microtrichia* n. g. p. 345, for *M. puttalama*, n. sp. Ceylon, p. 360, BRENSKE, Ent. Zeit. Stettin lxi.
- Neoserica moffarsi*, Sumatra, BRENSKE, p. 143, Mem. Soc. ent. Belgique vii; *N. parviana*, Cambodia, BRENSKE, p. 416, Bull. Mus. Paris 1899: n. spp.
- Ocnodus lepidus*, S. Australia, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Odontria zealandica* and *striatum*, injurious habits, SMITH, p. 11, Entomologist xxxiii.
- Oxyserica* n. g. for *O. pygidialis*, n. sp. Madagascar, BRENSKE, p. 58, Berlin. ent. Zeitschr. xlv.
- Parthenoserica* n. g. for *P. sulcata*, n. sp. Madagascar, BRENSKE, p. 50, t. c.
- Pentelia crinita*, Sumatra, BRENSKE, p. 151, Mem. Soc. ent. Belgique vii, n. sp.
- Philacelota* n. g. p. 11, near *Schonerria* but aberrant, for. *P. submaculata*, p. 12, pl. fig. 21, Celebes, *sulana* Sula Mangoli, p. 13, n. spp., HELLER, Abh. Mus. Dresden ix, No. 5.
- Phylloserica* n. g. p. 65, for *Pleophylla unicolor*, *brenskei* and *P. candezei*, n. sp. Madagascar, p. 67, BRENSKE, Berlin. ent. Zeitschr. 1900.
- Plasioserica* n. g. for *P. viridula*, n. sp. Madagascar, BRENSKE, p. 46, t. c.
- Plectris lignicola*, *fungicola*, St. Vincent, ARROW, Tr. ent. Soc. London 1900, n. spp.
- Plotopuserica* n. g. for *P. darwiniana*, n. sp. Madagascar, BRENSKE, p. 59, Berlin. ent. Zeitschr. 1900.
- Plusioserica* n. g. for *Omaloplia virescens* (Künck.) n. sp., Madagascar, BRENSKE, p. 45, t. c.
- Polyphylla*; revision of species, pp. 312–319; *P. laticollis mandshurica* subsp. n., p. 308; *P. alba vicaria* subsp. n., p. 309, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
- P. schestakowi*, Chinese Turkestan, SEMENOW, p. 310, t. c. n. sp.
- Pseudoserica* n. g. p. 60, for *P. amæna* n. sp., Madagascar, p. 61, BRENSKE, Berlin. ent. Zeitschr. xlv.
- Pseudotrematoides* a valid genus, *P. frivaldszyi* note, BRENSKE, p. 150, BODEMEYER (131).
- Rhizotrogus bodemeyeri*, Asia minor, BRENSKE, p. 150, BODEMEYER (131), n. sp.
- Schizonycha nigrofusca*, Somaliland, ARROW, p. 24, P. Zool. Soc. London 1900; *S. singhalensis*, Ceylon, BRENSKE, p. 350, Ent. Zeit. Stettin lxi: n. spp.
- Scitatala pruinosa*, *impressa*, Queensland, BRENSKE, Semon Forschungsreisen v, p. 622, n. spp.
- Sinochelus limbatus*, p. 618, *cinctipennis*, p. 619, China, FAIRMAIRE, Ann. Soc. ent. France lxxviii, n. spp.
- Tamnosserica* n. g. for *Emphania mutans* etc., BRENSKE, p. 55, Berlin. ent. Zeitschr. xlv.
- Tanyproctus turanicus*, Askhabad, REITTER, p. 52, Deutsche ent. Zeitschr. 1900, n. sp.
- Trachyserica* n. g., p. 53, for *T. longitarsa*, n. sp. Madagascar, p. 54, BRENSKE, Berlin. ent. Zeitschr. xlv.

*Rutelini.*

- Larvæ and habits of *Macraspis* and other Rutelids, OHAUS (956).  
 Revision of *Parastasiides* and list of the species, OHAUS, pp. 225-266, Deutsche ent. Zeitschr. 1900.  
*Adoretus caliginosus* var. n. *bicolor*, BRENSKE, p. 38, pl. iv, figg. 3, 4, Ind. Mus. Notes v.  
*A. bangalorensis*, E. India, BRENSKE, p. 38, pl. iv, figg. 1, 2, t. c.; *A. singhalensis*, Ceylon, OHAUS, p. 362, Ent. Zeit. Stettin lxi : n. spp.  
*Anoplognathus concinnus*, Queensland, BLACKBURN, p. 40, Tr. R. Soc. S. Austral. xxiv, n. sp.  
*Chlorota tristis*, St. Vincent, ARROW, Tr. ent. Soc. London 1900, n. sp.  
*Fruhstorferia 6-maculata*, Tonkin, with var. *bimaculata*, KRAATZ, p. 368, Deutsche ent. Zeitschr. 1900, n. sp.  
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*Lutera nigromaculata*, Tonkin, OHAUS, p. 261, Deutsche ent. Zeitschr. 1900, n. sp.  
*Parastasia melanocephaloidea*, Sumatra, p. 238, *quadrimaculata*, Java and Sumatra, p. 241, *kraatzii*, Sumatra, p. 242, *oberthuri*, Tonkin, p. 245, *punctulata*, Borneo and Sumatra, p. 252, *gestroi*, Borneo, p. 254, OHAUS, Deutsche ent. Zeitschr. 1900, n. spp.  
*Pelidnota velutipes*, Grenada, ARROW, Tr. ent. Soc. London 1900, n. sp.  
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*Dynastini.*

- Chalcosoma*; characters of the forms, including *C. mollenkampii*, cuts, GESTRO, pp. 396-399, Ann. Mus. Genova xl.  
*C. mollenkampii* Borneo, KOLBE, p. 52, Ent. Nachr. xxvi; note SRNKA, p. 94, t. c. : n. sp.  
*Cheiroplatys inermis*, Victoria, BLACKBURN, p. 212, P. Soc. Victoria xii, n. sp.  
*Coptognathus lefranci*, characters, BOURGEOIS, p. 246, Bull. Soc. ent. France 1900.  
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*Heteroligus* n. g. for pt. of *Heteronychus*, KOLBE, p. 164, Ent. Nachr. xxvi; and components, t. c. p. 327.  
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*Oryctes vicinus*, Sokotra, GAHAN, p. 11, Bull. Liverp. Mus. iii, n. sp.  
*Phileurides*: larvæ and habits, OHAUS, p. 215 etc., Ent. Zeit. Stettin lxi.  
*Xylotrupes gideon* var., p. 382, pl. xxxv, fig. 1, SHARP in Willey Results iv.



*Cetoniini.*

[The following memoirs relate to *Cetoniini* viz.:—BORDAS (144), FAIRMAIRE (389, 394), HEATH (571), GAHAN (29), HELLER (575), JANSON (659), KRAATZ (760–765, 768, 769, 771, 773–778), OHAUS (956), PÉRINGUEY (989), WASMANN (1379), WATERHOUSE (1383).]

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*Aplasta cinctipennis*, E. Africa, KRAATZ, p. 76, Deutsche ent. Zeitschr. 1900, n. sp.

*Bothrothorax* subg. n. cf. *Phymatopteryx*.

*Cetonia aurata*, Corsican varieties, HELLER, pp. 54–57, Ent. Nachr. xxvi.

*Clinteria nigra*, corrected habitat, KRAATZ, p. 384, Deutsche ent. Zeitschr. 1900.

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*Cœnochilus hospes, intrusus*, S. Africa, PÉRINGUEY, p. 71, Ann. Soc. ent.

France lxi; *C. termiticola*, p. 67, pl. fig. 1, *braunsi*, p. 82, fig. 2, S. Africa, WASMANN, Illustr. Zeitschr. Ent. v : n. spp.

*Cosmiomorpha similis*, Formosa, FAIRMAIRE, p. 621, Ann. Soc. ent. France lxxviii, n. sp.

*Cymophorus rufithorax*, E. Africa, KRAATZ, p. 10, Deutsche ent. Zeitschr. 1900, n. sp.

*Cyrrhochræa* n. gen. for *Euchræa auropigmentalis*, KRAATZ, p. 11, t. c.

*Dicranobia* n. n. for *Dicranophorus* Reitt. nec auctt., REITTER, p. 11, Wien. ent. Zeit. xix.

*Dilochrosis nigra*, Key Is., KRAATZ, p. 74, Deutsche ent. Zeitschr. 1900, n. sp.

*Dilochrosis bennigseni*, New Guinea, *marginicollis*, Australia?, KRAATZ, p. 383, t. c. n. sp.

*Fornasinius darcisi*, Bopoto, KRAATZ, p. 220, t. c. n. sp.

*Eudicella hereroensis*, Africa, KRAATZ, p. 416, t. c. n. sp.

*Gnathocera truncata*, Tanganika, p. 463, *legrosi*, E. Africa, p. 465, JANSON, Ann. Soc. ent. Belgique xlv, n. spp.

*Glycyphana burschicosa* varr., p. 186, *mollendorfi*, p. 187, *rufopicta*, p. 188, varr., KRAATZ, t. c.

*Golianthus* (sic) (*Sphyrorrhina*) *wisei*, E. Africa, HEATH, p. 397, Ann. Nat. Hist. v, n. sp.

*Ingrisma* n. g. [Fairmaire, Ann. Soc. ent. Belgique xxxvii, p. 293, but omitted from Zool. Rec.], *whiteheadi*, Hainan island, WATERHOUSE, Ann. Nat. Hist. v, p. 310, n. sp.

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*Melanochræa* n. g. near *Dirhina*, for *M. iridioides*, n. sp. Madagascar, KRAATZ, p. 11, Deutsche ent. Zeitschr. 1900.

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*Ogmophorus* n. g. near *Cœnochilus*, for *O. sulcicottis*, n. sp. Congo, KRAATZ, p. 13, Deutsche ent. Zeitschr. 1900.

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*P. nigroplagiata, semiflava*, p. 410, Congo, KRAATZ, t. c. n. spp.

*Phonotenia zambesiana*, Zambesi, KRAATZ, p. 78, t. c.; *P. fasciolata*, Usambara, with numerous varr., KRAATZ, p. 413, t. c. : n. spp.

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- Placodidus* n. g. p. 68, near *Scaptobius*, for *P. compransor*, n. sp. S. Africa, p. 69, PÉRINGUEY, Ann. Soc. ent. France lxi.
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- Pæcilopharis levipennis*, Key island, KRAATZ, p. 75, Deutsche ent. Zeitschr. 1900, n. sp.
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- P. andrewsi*, Christmas Is., GAHAN, p. 98, pl. x, fig. 5, Mon. Christmas Island, n. sp.
- Pygora chamæleon*, Madagascar, FAIRMAIRE, p. 86, Bull. Soc. ent. France 1900, n. sp.
- Rhadinotænia* n. g. for *Gametis? clytus* Westw., KRAATZ, p. 79, Deutsche ent. Zeitschr. 1900.
- Rhomborrhina mollenkampii*, Sumatra, KRAATZ, p. 415, t. c. n. sp.
- Smaragdesthes biplagiata*, W. Africa, KRAATZ, p. 75, t. c. n. sp.
- Stenotarsia bimaculata*, Madagascar, KRAATZ, p. 412, t. c. n. sp.
- Syntomopteryx* n. n. for *Brachypteryx* Kr., KRAATZ, p. 78, t. c.
- Taniodera whiteheadi*, p. 311, *T. (Euselates) galei*, p. 312, Hainan Is., WATERHOUSE, Ann. Nat. Hist. v, n. spp.
- Trichius podicalis*, p. 14, *tristiculus*, p. 15, W. Africa, KRAATZ, Deutsche ent. Zeitschr. 1899, n. spp.
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## BUPRESTIDÆ.

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- A. chalcoxantha*, Ashabad, BRANCSIK, p. 99, Jahresh. Ver. Trencsen. xxi; *A. perrieri*, Madagascar, FAIRMAIRE, p. 87, Bull. Soc. ent. France 1900; *A. acuminata*, Mexico, KERREMANS, p. 378, Termes. Fuzetek xxiii : n. spp.
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- for *subcornutus* Kerr. nec Deyr., *ventripotens* n. n. for *ventralis* Kerr. nec Horn, KERREMANS, pp. 341, 342, t. c.; *A. variegatus* Castl. referred to *Diplolophotus*, KERREMANS, p. 324, t. c.
- A. atriplicis*, Algeria, THÉRY, p. 33, Bull. Soc. ent. France 1900; *A. weyersi*, *ampliatus*, p. 23, *maculipennis*, p. 24, *æqualis*, p. 25, *subornatus*, *splendidus*, p. 26, *famulus*, p. 27, *connexus*, *coræboides*, p. 28, *amorphus*, p. 29, *aurocyaneus*, *valens*, p. 30, *punctiventris*, p. 31, *subconsularis*, *convexus*, p. 32, *singularis*, *nervosus*, p. 33, *aberrans*, *cupratus*, p. 34, *videns*, *pyritosus*, p. 35, *laeviventris*, p. 36, Sumatra, KERREMANS, Mem. Soc. ent. Belgique vii; *A. raapi*, Nias Is., *woodlarkianus*, Woodlark Is., p. 82, *lombokanus*, Lombok, p. 83, *subvalidus*, Borneo, p. 84, KERREMANS, t. c.; *A. velutinus*, Brazil, p. 324, *subpygopus*, Sumatra, *erratus*, Brazil, *clarus*, Mexico, p. 325, *depressifrons*, p. 326, *guttifer*, p. 327, *ostentator*, Brazil, *depressicollis*, Guatemala, p. 328, *notabilis*, no locality, p. 329, *luculentus*, p. 330, *comptus*, Brazil, *frustrator*, Colombia, p. 331, *indagator*, *sacer*, p. 332, Brazil, *claveri*, *longus*, Colombia, p. 333, *purus*, *bellator*, Brazil, p. 334, *vendicator*, Sumatra, p. 335, *perakianus*, Perak, *opulentus*, New Guinea, p. 336, *nepos*, Borneo, p. 337, *dohrni*, p. 338, *testor*, *semivestitus*, p. 339, *oblatus*, Sumatra, *levifrons*, Cape Good Hope, p. 340, KERREMANS, Ann. Soc. ent. Belgique xlv; *A. medius*, Amazons, KERREMANS, p. 378, Termes, Fuzetek xxiii : n. spp.
- Amorphosoma*, characters, KERREMANS, p. 323, Ann. Soc. ent. Belgique xlv; *A. gibbifrons* Kerr., referred to *Agrilus*, KERREMANS, p. 324, t. c.
- A. planatum*, Andaman Ids., KERREMANS, p. 80, Mem. Soc. ent. Belgique vii; *A. spinipenne*, *elongatum*, Sumatra, KERREMANS, p. 15, t. c. : n. spp.
- Anthaxia æneopicea*, Cashmere, KERREMANS, p. 71, t. c.; *A. weyersi*, Sumatra, KERREMANS, p. 10, t. c.; *A. unicolor*, p. 298, *cyaneoviridis*, *fascipennis*, *brunneipennis*, p. 299, *alterna*, *brasiliensis*, p. 300, *occidentalis*, *splendidecollis*, p. 301, *plana*, *ocularis*, *subviridis*, p. 302, *funebis*, *minuta*, p. 303, Goyaz, Brazil, *hauzeri*, E. Africa, p. 304, KERREMANS, Ann. Soc. ent. Belgique xlv : n. spp.
- Anthracomorphus*, *viridiceps*, Sumatra, KERREMANS, p. 37, Mem. Soc. ent. Belgique vii, n. spp.
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- Astræus cyaneus*, New South Wales, KERREMANS, p. 295, Ann. Soc. ent. Belgique xlv, n. spp.
- Aurigena unicolor*, habits, MAYET, p. 229, Bull. Soc. ent. France 1900.
- Belionota sagittaria*, *prasina*, distinguished, KERREMANS, p. 304, Ann. Soc. ent. Belgique xlv.
- Brachys floricola*, Florida, *suavis*, p. 347, *taciturnus*, *debilis*, p. 348, Guatemala, KERREMANS, t. c. n. spp.
- Buprestis*; synonymy, KERREMANS, p. 295, t. c.
- Callimicra collaris*, p. 350, *pygmæa*, p. 351, Goyaz, KERREMANS, t. c. n. spp.
- Callopietus castelnaudi*=(*quedenfeldti* Richt.=*atrovirens* Nonfr.), KERREMANS, p. 283, t. c.
- Castalia*, the valid species, KERREMANS, p. 309, t. c.
- Chalcogenia suturalis* Kerr.=(*Chalcotenia cupreosuturalis* Fairm.), KERREMANS, p. 298, t. c.
- Chalcophora africana* Th. (as *Chalcotenia*)=(*telekyi* Fairm.), KERREMANS, p. 287, t. c.
- Chalcotenia cuprascens*=(*australis* Th.), *salamandra* Th.=(*vittata* Wat.), KERREMANS, p. 286, t. c.



- C. longicollis*, South East Ids., KERREMANS, p. 63, Mem. Soc. ent. Belgique vii, n. sp.
- Chrysaspis aurata* Fabr. = (*Chrysodema splendens* Nonfr.), p. 282, *C. vittigera* Kerr. is a valid species, also *kassaiensis* Kerr., p. 283, KERREMANS, Ann. Soc. ent. Belgique xlv.
- Chrysobothris borneensis* n. n. for *delectabilis* Kerr. nec Wat., *reitteri* n. n. for *inæqualis* Reitt. nec Wat., p. 304, *gabonica* n. n. for *parallela* Kerr. nec Deyr., p. 305, *curvicollis* n. n. for *rotundicollis* Kerr. nec Cast., p. 306, KERREMANS, t. c.
- C. andrewsi*, Christmas Is., WATERHOUSE, p. 99, pl. x, fig. 8, Monogr. Christmas Island; *C. weyersi*, Sumatra, KERREMANS, p. 11, Mem. Soc. ent. Belgique vii; *C. talautana*, Talaut Is., *deliana*, Sumatra, p. 72, *ignipicta*, Kei-Toaal Is., p. 73, *vicina*, *purpureicollis*, Woodlark Is., p. 74, *delectabilis*, Borneo, p. 75, *iridea*, Woodlark Is., p. 76, KERREMANS, t. c.; *C. solitaris*, *carminea*, Brazil, p. 305, *apicalis*, Mexico, p. 306, KERREMANS, Ann. Soc. ent. Belgique xlv : n. spp.
- Chrysodema mnizechi* = (*fairmairei* Kerr.), KERREMANS, p. 286, t. c.
- C. cyanicollis*, *eneicollis*, Djampea Is., *elongata*, Key Ids., KERREMANS, p. 62, Mem. Soc. ent. Belgique vii, n. spp.
- Cissaeoides*; components, KERREMANS, p. 322, Ann. Soc. ent. Belgique xlv.
- C. obesa*, N. Guinea, id. l. c. n. sp.
- Cisseis brachyformis* referred to *Hypocisseis*, KERREMANS, p. 323, t. c.
- C. pretiosissimus*, Sumatra, KERREMANS, p. 14, Mem. Soc. ent. Belgique vii; *C. fraterna*, New Guinea, KERREMANS, p. 80, t. c. : n. spp.
- Clema* n. g. near *Coræbus*, p. 590, for *C. deserti* n. sp., Transcaspiian, p. 592, SEMENOW, HORÆ Soc. ent. Ross. xxxiv.
- Coræbus semipurpureus* Fairm. = (*feæ* Kerr.), *C. beauchenei* (Fairm. as *Melibeus*) = (*fossulatus* Kerr.), *intricatus* Fairm. = (*sida* Kerr.), KERREMANS, p. 321, Ann. Soc. ent. Belgique xlv; *C. bedeli* Th. = (*chinensis* Kerr.), KERREMANS, p. 320, t. c.
- C. thoracellus*, China, *vicinus*, New Guinea, KERREMANS, p. 320, t. c.; *C. grandis*, Philippines, p. 77, *purpureus*, Sumatra, *dentipennis*, Manipur, p. 78, *transversus*, Leite, p. 79, KERREMANS, Mem. Soc. ent. Belgique vii; *C. weyersi*, p. 12, *picturellus*, *viridis*, p. 13, Sumatra, KERREMANS, t. c. : n. spp.
- Cyphogastra*; numerous synonyms, KERREMANS, pp. 287, 288, Ann. Soc. ent. Belgique xlv.
- C. staudingeri*, Dammer Is., KERREMANS, p. 65, Mem. Soc. ent. Belgique vii, n. sp.
- Demockroa indica*, India, CSIKI, p. 402, Termes. Fuzetek xxiii, n. sp.
- Demostis* n. g. for *Amorphosoma elongatum* Kerr. [above], KERREMANS, p. 322, Ann. Soc. ent. Belgique xlv.
- Diadora* n. g. for *Amorphosoma gibbicollis*, *lutea*, KERREMANS, p. 323, t. c.
- Dicerca latouchei*, China, FAIRMAIRE, p. 622, Ann. Soc. ent. France lxviii, n. sp.
- Dicercomorpha*; synonymy, KERREMANS, p. 294, Ann. Soc. ent. Belgique xlv.
- D. aurocuprea*, Rossell Is., KERREMANS, p. 66, Mem. Soc. ent. Belgique vii, n. sp.
- Diceropygus viridis*, Woodlark Is., *tristis*, Tulagi, KERREMANS, p. 70, t. c. n. spp.
- Discoderes*, characters and composition, KERREMANS, p. 318, Ann. Soc. ent. Belgique xlv; *D. quadricornis* Fairm. referred to *Phlocteis*, KERREMANS, p. 324, t. c.
- D. perrieri*, Madagascar, FAIRMAIRE, p. 244, t. c. n. sp.
- Endelus parallelus*, *elongatus*, p. 44, *minutus*, *collaris*, p. 45, *cæruleus*, p. 46, Sumatra, KERREMANS, Mem. Soc. ent. Belgique vii; *E. signatus*, New Guinea, p. 84, *cornutus*, Batchian, p. 85, *diabolicus*, New Guinea,



- p. 86, KERREMANS, t. c.; *E. subcornutus*, New Guinea, KERREMANS, p. 344, Ann. Soc. ent. Belgique xlv; *E. sulcicollis*, Celebes, HELLER, p. 13, pl., fig. 6, Abh. Mus. Dresden ix, No. 5 : n. spp.
- Entomogaster*, the components, KERREMANS, p. 319, Ann. Soc. ent. Belgique xlv.
- E. perrieri*, *amplicollis*, Madagascar, FAIRMAIRE, p. 243, t. c. n. spp.
- Epimacha* n. g. for *Amorphosoma planatum* Kerr. [above], KERREMANS, p. 321, t. c.
- Ethon*, characters and components, KERREMANS, p. 319, t. c.
- Euchroma harperi* a valid species, KERREMANS, p. 283, t. c.
- Halecia gentilis* Horn, referred to *Agacocera*, KERREMANS, p. 284, t. c.
- H. sternalis*, Brazil, id. l. c. n. sp.
- Hypoprasis harpago* Fairm. (= *magnifica* Phil.), KERREMANS, p. 285, t. c.
- Iridotania plicata*, p. 9, *weyersi*, p. 10, Sumatra, KERREMANS, Mem. Soc. ent. Belgique vii; *I. viridiceps*, Java, KERREMANS, p. 61, t. c. : n. spp.
- I. latesulcata*, Amboina, KERREMANS, p. 285, Ann. Soc. ent. Belgique xlv, n. sp.
- Julodis*, synonymical notes, KERREMANS, pp. 310, 311, t. c.
- J. laticollis*, Somaliland, GAHAN, p. 25, pl. i, fig. 15, P. Zool. Soc. London 1900, n. sp.
- Leioptera claveri*, Colombia, KERREMANS, p. 350, Ann. Soc. ent. Belgique xlv, n. sp.
- Lius ceruleus*, *aterrimus*, Goyaz, *timidus*, Guatemala, KERREMANS, p. 349, t. c. n. spp.
- Melanophila jakowlewi*, Transcaspian, SEMENOW, p. 589, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Melibæus celestis*, Sumatra, KERREMANS, p. 14, Mem. Soc. ent. Belgique vii, n. sp.
- Melobasina* n. g. near *Melobasis*, p. 68, for *M. apicalis* n. sp., Tugela Is., p. 69, KERREMANS, t. c.
- Melobasis lugubrina*, New Guinea, KERREMANS, l. c.; *M. nigrita*, *acuta*, p. 296, *ignipicta*, p. 297, Australia, KERREMANS, Ann. Soc. ent. Belgique xlv : n. spp.
- Nascio lunaris*, N. S. Wales, KERREMANS, p. 294, t. c. n. sp.
- Neospades lateralis*, note on, KERREMANS, p. 319, t. c.
- Oedisterna animosa*, Transvaal, KERREMANS, p. 293, t. c. n. sp.
- Ovalisia* n. g. near *Pacilonota*, p. 67, for *O. insularis* n. sp., Tugela Is., p. 68, KERREMANS, Mem. Soc. ent. Belgique vii; *O. merged* in *Pacilonota*, KERREMANS, p. 294, Ann. Soc. ent. Belgique xlv.
- Rhaphidochila* subg. n., cf. *Sphenoptera*.
- Pachyschelus semilunaris*, Surinam, *dohrni*, Sumatra, KERREMANS, p. 346, t. c.; *P. weyersi*, Sumatra, KERREMANS, p. 60, Mem. Soc. ent. Belgique vii : n. spp.
- Paracephala thoracica*, Australia, KERREMANS, p. 343, Ann. Soc. ent. Belgique xlv, n. sp.
- Paracupta albivittis* (= *pyritosa* Boh.), p. 287; *P. dohrni* and *doriana* referred to *Chrysodema*, p. 286, KERREMANS, t. c.
- P. meyeri*, Fiji Ids., p. 63, *cupreosplendens*, New Hanover, *isabellina*, Isabelle Is., p. 64, KERREMANS, Mem. Soc. ent. Belgique vii; *P. pisciformis*, New Guinea, KERREMANS, p. 286, Ann. Soc. ent. Belgique xlv : n. spp.
- Paradora* n. gen. for *Discoderes pumicatus*, *saxosicollis*, *Phlocteis zonata*, and *Coræbus impetigosus*, KERREMANS, p. 323, t. c.
- Pasiphae* Thoms., position is near *Halecia*, characters, KERREMANS, p. 285, t. c.
- Phænops ærea*, Bosnia, FORMANEK, p. 168, Wien. ent. Zeit. xix, n. sp.
- Phlocteis elongata*, Congo, KERREMANS, p. 323, Ann. Soc. ent. Belgique xlv, n. sp.

- Pæcilonota cyanipes* Say = (*debilis* Lec.), KERREMANS, p. 294, t. c.  
*Polybothris*, numerous synonyms, KERREMANS, pp. 291–293, t. c.  
*P. affinis*, p. 292, *luteopicta*, p. 293, Madagascar, KERREMANS, t. c. n. spp.  
*Polycesta hauzerei*, E. Africa, KERREMANS, p. 309, t. c. n. sp.  
*Polyonychus*, characters and composition, KERREMANS, p. 321, t. c.  
*Pseudochrysodema aruensis* Kerr. referred to *Paracupta*, KERREMANS, p. 287, t. c.  
*Psiloptera*; much synonymy, pp. 288, 289, 293; *P. aureomicans* Nonfr. referred to *Halecia*, p. 284, KERREMANS, t. c.  
*P. macalisteri*, Egypt, WATERHOUSE, p. 219, Ann. Nat. Hist. vi; *P. somalica*, Somaliland, GAHAN, p. 25, pl. i, fig. 10, P. Zool. Soc. London 1900; *P. baliana*, Bali, KERREMANS, p. 66, Mem. Soc. ent. Belgique vii; *P. cupriventris*, Argentina, p. 288, *stictica*, p. 289, *clavareani*, Congo, *victor*, Transvaal, p. 290, KERREMANS, Ann. Soc. ent. Belgique xlv : n. spp.  
*Ptosima sericea* Kerr. referred to *Sponsor*, KERREMANS, p. 310, t. c.  
*Sumboides* n. g., p. 16, for *S. viridana* n. sp., Sumatra, p. 17, KERREMANS, Mem. Soc. ent. Belgique vii.  
*Sumbus opacus*, p. 17, *pictus*, *weyersi*, p. 18, *gratiosus*, *ceneus*, p. 19, *pauper*, *simplex*, *delectabilis*, p. 20, KERREMANS, t. c.; *S. fulgidicollis*, Sikkim, *simplex*, Roos Is., KERREMANS, p. 81, t. c.; *S. prainæ*, Himalaya, HAUSER, p. 111, Deutsche ent. Zeitschr. 1900; *S. fulvopictus*, Sumatra, KERREMANS, p. 321, Ann. Soc. ent. Belgique xlv : n. spp.  
*Sphenoptera antiqua* and allies, revision, JAKOWLEFF, pp. 199–206, Horæ Soc. ent. Ross. xxxiv.  
*S. (Chrysoblemma) alcides*, p. 84, *alfredi*, p. 85, Tunis, REITER, Deutsche ent. Zeitschr. 1900; *S. (Hoplistura) artamonowi*, Abyssinia, p. 96, *S. (Chrysoblemma) tschitscherini*, Transcaspian, p. 98, *zarudnyi*, E. Persia, p. 99, *S. (Deudora) hamata*, Turkestan, p. 101, *S. kozłowi*, W. China, p. 102, *abbreviata*, Armenia, p. 104, *stenophthalma*, Caucasus, p. 105, JAKOWLEFF, Horæ Soc. ent. Ross. xxxiv; *S. diluta*, p. 202, Armenia, *spretta*, Russian Turkestan, p. 203, JAKOWLEFF, t. c.; *S. (Deudora) afflicta*, Turkestan, p. 406, *serena*, p. 407, *fraterna*, p. 408, Asia Minor, *allecta*, Transcaucasus, p. 410, *addenda*, Asia Minor, p. 413, *misella*, Transcaucasus, p. 415, *conjuncta*, Turkestan, p. 416, *jejuna*, p. 417, *congrua*, p. 419, Araxes Valley, *anxia*, Syria, p. 420, *bucharica*, Buchara, p. 422, *S. korshinskii*, p. 423, Buchara, *edmundi*, Syria, p. 425, *cyphogastra*, Turkestan, p. 426, *manifesta*, Transcaucasus, p. 428, *vidua*, Changai, p. 429, *serripes*, Transcaspian, p. 431, *S. (Chilostetha) elegans*, Transcaucasus, p. 433, *sokolowi*, Turkestan, p. 434, *S. (Hoplistura) convicta*, Asia Minor, p. 435, *madagascariensis*, Madagascar, p. 437, *S. (Hoplandrocneme) arguta*, Persia, p. 440, *S. (Chrysoblemma) ahngerii*, Transcaspian, p. 441, *gracilis*, Caspian, p. 442, *S. (Rhaphidochila* subg. n.) *nox*, Persia, p. 445, *S. ebenina*, Alai, p. 498, *atramentaria*, Armenia, p. 500, *bodemeyeri*, p. 501, *aliena*, p. 503, *S. (Deudora) danieli*, p. 504, Asia Minor, *segregata*, Transcaucasus, p. 506, *S. (Hoplistura) leontiewi*, Abyssinia, p. 507, JAKOWLEFF, t. c. : n. spp.  
*Sponsorinus* n. g. near *Trachys*, p. 241, for *S. perrieri*, *latus*, n. spp., Madagascar, p. 242, FAIRMAIRE, Ann. Soc. ent. Belgique xlv.  
*Stenianthe metallina*, Madagascar, FAIRMAIRE, p. 243, t. c. n. sp.  
*Steraspis staudingeri*, E. Africa, KERREMANS, p. 282, t. c. n. sp.  
*Sternocera kustai* Nonfr., note on, KERREMANS, p. 311, t. c.  
*Stigmodera*; extensive synonymy, especially of Thomson's species, KERREMANS, pp. 312, 313, t. c.; *S.*; extensive synonymy, not here reproduced, pp. 41–48; *S. subgrata* n. n. for *campestris* Kerr., p. 41, *dulcis* n. n. for *colorata* Kerr., p. 41, BLACKBURN, Tr. R. Soc. S. Austral. xxiv.

- S. insignicollis*, p. 45, *rubriventris*, p. 46, W. Australia, BLACKBURN, t. c.; *S. clara*, p. 313, *apicerubra*, *pictiventris*, p. 314, *cyaniventris*, *spectabilis*, p. 315, *caudata*, *gentilis*, *scutellaris*, p. 316, *subcostata*, *diversa*, *tripartita*, p. 317, Australia, KERREMANS, Ann. Soc. ent. Belgique xlv : n. spp.
- Strigulia cycloderus*; Fairm. (as *Agrilus*)=*lacerta* Kerr., KERREMANS, p. 319, t. c.
- Taphrocerus cupriceps*, Goyaz, KERREMANS, p. 344, t. c.; *T. bifasciatus*, Amazons, KERREMANS, p. 379, Termes. Fuzetek xxiii : n. spp.
- Tetragonoschema fossicollis*, Brazil, KERREMANS, p. 297, Ann. Soc. ent. Belgique xlv, n. sp.
- Thrincopyge* and species redefined, KERREMANS, pp. 307–309, t. c.
- Toxoscelus singularis*, Sumatra, KERREMANS, p. 12, Mem. Soc. ent. Belgique vii, n. sp.
- Trachys clermonti*, Montpellier, ROGER, p. 32, Echange xvi; *T. obesa*, Zambesi, *antiqua*, New Guinea, p. 345, KERREMANS, Ann. Soc. ent. Belgique xlv; *T. vermiculata*, *verna*, p. 48, *gravida*, *dejecta*, p. 49, *sparsuta*, *cyanura*, p. 50, *æqualis*, *cincta*, *pilifrons*, p. 51, *costipennis*, *corpulentus*, p. 52, *lineata*, p. 53, *nobilitata*, *affinis*, p. 54, *perplexa*, *dissimilis*, p. 55, *curvifrons*, *media*, p. 56, *weyersi*, *modesta*, p. 57, *delectabilis*, *amabilis*, p. 58, *æneola*, *congener*, p. 59, *tetra*, p. 60, Sumatra, KERREMANS, Mem. Soc. ent. Belgique vii; *T. fergussonica*, Fergusson Is., *bruneiana*, Brunei, *asiatica*, Kashmir, p. 87, *borneensis*, Borneo, p. 88, *andaica*, New Guinea, p. 88, *banqueyana*, *sincera*, p. 89, *Banguay*, *insidiosa*, Fergusson Is., *fraterna*, Philippines, p. 90, *modica*, *placida*, New Guinea, p. 91, *konbirensis*, Bengal, *ignota*, Montarjuno, *moesta*, New Guinea, p. 92, *prudens*, Fergusson Is., p. 93, KERREMANS, t. c. : n. spp.
- Velutia* n. g. near *Toxoscelus*, p. 342, for *V. sericea* n. sp., Brazil, p. 343, KERREMANS, Ann. Soc. ent. Belgique xlv.

## THROSCIDÆ.

- Throscus dermestoides*, variation, CHAMPION, p. 12, Ent. Mag. xxxvi.

## EUCNEMIDÆ.

[Cf. BLACKBURN (123, 125).]

- The Australian genera, BLACKBURN, pp. 215–217, P. Soc. Victoria xii.
- Discaptothorax* n. g., p. 219, for *D. koebelei* n. sp., Queensland, p. 220, BLACKBURN, t. c.
- Dromæolus thoracicus*, Lea, referred to *Nematodes*, BLACKBURN, p. 219, t. c.
- Dyscharachthis* n. g., p. 217, for *D. brevipennis* n. sp., Australia, BLACKBURN, t. c.
- Dyscolocerus concolor*, p. 224, *victoriensis*, p. 225, Australia, BLACKBURN, t. c. n. spp.
- Dystrigonthis* n. g., p. 221, for *D. paradoxus* n. sp., Queensland, p. 222, BLACKBURN, t. c.
- Entomophthalmus uniformis*, Queensland, BLACKBURN, p. 224, t. c. n. sp.
- Eucnemis capucina*, pupa, HACKER, p. 266, Illustr. Zeitschr. Ent. v.
- Microhagus cairnesensis*, Queensland, BLACKBURN, p. 222, P. Soc. Victoria xii, n. sp.
- Neolycaon* n. n. for *Lycaon* Bonv. nec Brookes, BLACKBURN, p. 49, Tr. R. Soc. S. Austral. xxiv.
- Trigonopleurus rugulosus* Bonv.=(*Dromæolus nigricollis* Lea), BLACKBURN, p. 219, P. Soc. Victoria xii.



## ELATERIDÆ.

[Cf. BORDAS (144), BLACKBURN (123, 124, 125), DU BUYSSON (214, 215), CANDÈZE (224), GAHAN (480, 983), HAUSER (569), HELLER (573), KINCAID (711), REITTER (1092, 1096, 1101), O. SCHWARZ (1170 to 1175), SEMENOW (1195), WATERHOUSE (1386), XAMBEU (1420).]

*Adelocera grisea*, Buchara, SCHWARZ, p. 98, Deutsche ent. Zeitschr. 1900, n. sp.

*Adelocera anthracina*, Madagascar, CANDÈZE, p. 77, Ann. Soc. ent. Belgique xlv, n. sp.

*Æolus centralis*, cylindricus, Goyaz, CANDÈZE, p. 86, t. c.; *A. brunnei-ventris*, p. 316, *goyasiensis*, p. 317, Brazil, *longicornis*, Surinam, p. 318, *brevipennis*, Brazil, p. 319, SCHWARZ, Deutsche ent. Zeitschr. 1900 : n. spp.

*Agelasinus antennalis*, Peru, SCHWARZ, p. 354, t. c. n. sp.

*Agonischius ruficollis*, Sumatra, SCHWARZ, p. 96, t. c.; *A. murinus*, placidus, Borneo, *basilaris*, Australia, CANDÈZE, p. 98, Ann. Soc. ent. Belgique xlv : n. spp.

*Agriotes constrictus*, Asia Minor, REITTER, p. 86, Deutsche ent. Zeitschr. 1900, n. sp.

*Agrypnus longicornis*, Somaliland, GAHAN, p. 26, pl. i, fig. 11, P. Zool. Soc. London 1900, n. sp.

*Alampes boliviensis*, *corymbitoides*, S. America, CANDÈZE, Ann. Soc. ent. Belgique xlv, n. spp.

*Alaomorphus* n. g., p. 141, for *A. candezei* n. sp., E. Africa, p. 143, HAUSER, Deutsche ent. Zeitschr. 1900.

*Alaus longipennis*, Usambara, SCHWARZ, p. 145, t. c.; *A. sulcicollis*, Sokotra, GAHAN, p. 11, Bull. Liverp. Mus. iii; *A. depressicollis*, Palau, SCHWARZ, p. 305, Deutsche ent. Zeitschr. 1900; *A. bubonius*, Bangkei, *staudingeri*, Talaut Is., *morphnus*, p. 80, *striatus*, N. Guinea, *hybris*, Key Is., p. 81, CANDÈZE, Ann. Soc. ent. Belgique xlv : n. spp.

*Anchastomorphus sexmaculatus*, Goyaz, SCHWARZ, p. 328, Deutsche ent. Zeitschr. 1900, n. sp.

*Anchastus discoidalis*, Christmas Is., WATERHOUSE, p. 100, Mon. Christmas Island; *A. latus*, E. Africa, *semistriatus*, Cameroons, SCHWARZ, p. 151, Deutsche ent. Zeitschr. 1900; *A. ferrugineipennis*, Borneo, *zambianus*, Congo, CANDÈZE, p. 91, Ann. Soc. ent. Belgique xlv : n. spp.

*Anoplisthius dorsalis*, Mexico, SCHWARZ, p. 310, Deutsche ent. Zeitschr. 1900; *A. conicus*, *anemicus*, Bolivia, CANDÈZE, p. 84, Ann. Soc. ent. Belgique xlv : n. spp.

*Arrhaphes apicalis*, Sumatra, SCHWARZ, p. 94, Deutsche ent. Zeitschr. 1900, n. sp.

*Arctapila* subg. n., cf. *Cryptohypnus*.

*Athous villosus* var. n. *caucasicus*, BUYSSON, p. 232, Bull. Soc. ent. France 1900.

*A. lepontinus*, Piedmont, p. 106, *judicariensis*, Tyrol, p. 107, *altaicus*, Altai, p. 108, *urgensis*, Amur, p. 109, SCHWARZ, Deutsche ent. Zeitschr. 1900; *A. mesmini*, Caucasus, BUYSSON, p. 231, Bull. Soc. ent. France 1900; *A. holderevi*, Manschan, REITTER, p. 159, pl. i, fig. 5, Wien. ent. Zeit. xix : n. spp.

*Atractosomus nigerrimus*, Mexico, SCHWARZ, p. 312, Deutsche ent. Zeitschr. 1900, n. sp.

*Caleodinus* n. g. near *Hapatesus*, for *C. fairmairei* n. sp., Madagascar, CANDÈZE, p. 98, Ann. Soc. ent. Belgique xlv.

*Cardiophorus hauseri*, *variipennis*, p. 100, *inermis*, p. 101, *bucharensis*,



- Centr. Asia, *impressiventris*, Asia Minor, p. 102, *foveiventris*, *foveolatus*, Greece, p. 103, *oertzeni*, Crete, *sahlbergi*, Amu-Darja, p. 104, SCHWARZ, Deutsche ent. Zeitschr. 1900; *C. athoides*, *excisus*, p. 152, *rufiventris*, p. 153, *vadosus*, p. 154, *brevicornis*, p. 155, *breviusculus*, *quadristriatus*, p. 156, *adrastoides*, p. 157, *subdentatus*, p. 158, *gregarius*, *testaceipennis*, p. 159, *obscuripes*, p. 160, Africa, SCHWARZ, t. c.; *C. sumptuosus*, Madagascar, CANDÈZE, p. 93, Ann. Soc. ent. Belgique xlv : n. spp.
- Chrosis angusticollis*, Victoria, BLACKBURN, p. 114, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Clon* n. g. *Campylides*, p. 594, for *C. cerambycinus*, p. 596, *umbratus*, p. 597, n. spp., Buchara, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
- Corymbites altaicus*, p. 110, *tibialis*, p. 111, Altai, SCHWARZ, Deutsche ent. Zeitschr. 1900; *C. tibeticus*, Tibet, p. 95, *fallaciosus*, Kashmir, *exotans*, Punjaub, *suavis*, Tasmania, *australicus*, Australia, p. 96, CANDÈZE, Ann. Soc. ent. Belgique xlv : n. spp.
- Cosmesus bimaculatus*, p. 347, *fuscoapicalis*, *apicalis*, p. 348, *luteipes*, Brazil, *robustus*, Peru, 349, *maculipennis*, p. 350, *flavovittatus*, Brazil, *adrastoides*, Peru, p. 351, *annulatus*, p. 352, *inscriptus*, *discicollis*, p. 353, Brazil, SCHWARZ, Deutsche ent. Zeitschr. 1900, n. spp.
- Crepidius blepharipes*, Mexico, SCHWARZ, p. 311, t. c.; *C. ornatus*, Peru, CANDÈZE, p. 85, Ann. Soc. ent. Belgique xlv : n. spp.
- Cryptohypnus*, the European, DU BUYSSON (215) with *Archapila* subg. n., pp. 227 & 247, for *C. brucki* Cand.; *C. littoralis*, larva, KINCAID, p. 375, pl. xxv, figg. 1, 2, P. Washington Ac. ii.
- C. grouvellei*, France, BUYSSON, p. 250 (215); *C. indicus*, *tactus*, India, p. 92, *quadriractus*, Borneo, p. 93, CANDÈZE, Ann. Soc. ent. Belgique xlv : n. spp.
- Ctenoplus nitidipennis*, p. 355, *nigripennis*, p. 356, Borneo, SCHWARZ, Deutsche ent. Zeitschr. 1900, n. spp.
- Deromecus niger*, Chili, SCHWARZ, p. 329, t. c.; [*Deromerus*] *anthracinus*, *vittipennis*, Chili, CANDÈZE, p. 91, Ann. Soc. ent. Belgique xlv : n. spp.
- Diploconus nigriceps*, Sumatra, SCHWARZ, p. 95, Deutsche ent. Zeitschr. 1900; *D. nitidicollis*, Celebes, p. 341, *basalis*, Sumatra, p. 342, *ruficollis*, New Guinea, p. 343, SCHWARZ, t. c. : n. spp.
- Drasterius bimaculatus* varr., BUYSSON (215) pp. 261–263.
- D. cruciatus*, Borneo, *gibbulus*, Guinea, p. 86, *opacus*, *australis*, *spissus*, p. 87, Australia, CANDÈZE, Ann. Soc. ent. Belgique xlv : n. spp.
- Echthrogaster* n. g. *Campylidarum*?, p. 213, for *E. lugubris* n. sp., S. Australia, p. 215, BLACKBURN, P. Soc. Victoria xii.
- Elatér forticornis*, Balkans, SCHWARZ, p. 99, Deutsche ent. Zeitschr. 1900; *E. radula*, Punjaub, *tinctipes*, Australia, CANDÈZE, p. 87, Ann. Soc. ent. Belgique xlv : n. spp.
- Euphemus plasoni*, E. Africa, CANDÈZE, p. 79, t. c. n. sp.
- Glypheus piceus*, Australia, CANDÈZE, p. 85, t. c. n. sp.
- Glyphonyx africanus*, Guinea, CANDÈZE, p. 98, t. c.; *G. ferrugineus*, Sumatra, SCHWARZ, p. 97, Deutsche ent. Zeitschr. 1900 : n. spp.
- Hapatesus jugulatus*, Australia, CANDÈZE, p. 97, Ann. Soc. ent. Belgique xlv, n. sp.
- Hemirhipus scriptus*, Surinam, CANDÈZE, p. 81, t. c. n. sp.
- Heteroderes lineolus*, p. 359, *dorsalis*, p. 360, W. Africa, SCHWARZ, Deutsche ent. Zeitschr. 1900; *H. nigrofasciatus*, p. 146, *ferrugineus*, *inornatus*, p. 147, *opaculus*, *cuneolus*, p. 148, Trop. Africa, SCHWARZ, t. c. : n. spp.
- Hypnoides musculus*, larva, KINCAID, p. 374, pl. xxv, figg. 3–7, P. Washington Ac. ii.
- Ischiodontus lateralis*, La Plata, p. 84, *rufipennis*, Goyaz, p. 85, CANDÈZE, Ann. Soc. ent. Belgique xlv, n. spp.

- Lacon equalis*, Kashmir, CANDÈZE, p. 78, t. c.; *L. farinensis*, S. Australia, BLACKBURN, p. 49, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Limonium crassipes*, Turkey, SCHWARZ, p. 105, Deutsche ent. Zeitschr. 1900; *L. nigrinus*, Kashmir, *collaris*, New S. Wales, CANDÈZE, p. 94, Ann. Soc. ent. Belgique xlv : n. spp.
- Lycoreus alluaudi*, Madagascar, CANDÈZE, p. 79, t. c.; *L. imperialis*, Madagascar, SCHWARZ, p. 302, Deutsche ent. Zeitschr. 1900 : n. spp.
- Megapenthes asperulatus*, Burma, CANDÈZE, p. 88, Ann. Soc. ent. Belgique xlv; *M. spinipennis*, *lacer*, Sumatra, SCHWARZ, p. 91, Deutsche ent. Zeitschr. 1900; *M. andrewsi*, Christmas Is., WATERHOUSE, p. 101, pl. x, fig. 7, Mon. Christmas Island : n. spp.
- Melanotus planipennis*, Kashmir, *opicus*, p. 93, *perlonges*, p. 94, Punjaub, CANDÈZE, Ann. Soc. ent. Belgique xlv, n. spp.
- Melanoxanthus* and *Megapenthes* not distinct, SCHWARZ, p. 320, Deutsche ent. Zeitschr. 1900.
- Melan. rugulosus*, p. 149, *humeralis*, p. 150, East Africa, SCHWARZ, t. c.; *M. fumosus*, p. 92, *flavobasalis*, p. 93, Sumatra, SCHWARZ, t. c.; *M. biligatus*, *major*, Borneo, *princeps*, Sumatra, p. 88, *gracilis*, Java, *circumcinctus*, Malacca, *flavangulus*, Sanghir, *festucalis*, Sumbawa, p. 89, *frivolus*, Timor, *deletus*, *flavocinctus*, Borneo, *guttatus*, Madagascar, p. 90, CANDÈZE, Ann. Soc. ent. Belgique xlv; *M. dubius*, Sumatra, p. 319, *ambiguus*, Burma, p. 320, *fucosus*, p. 321, *rubripennis*, *abdominalis*, p. 322, *flavovittatus*, p. 323, *flavofasciatus*, *nigrolateralis*, p. 324, Borneo, *egregius*, Java, p. 325, *cylindricollis*, Sumatra, p. 326, *suturalis*, Madagascar, p. 327, SCHWARZ, Deutsche ent. Zeitschr. 1900; *M. archeducalis*, Celebes, HELLER, p. 14, pl. fig. 4, Abh. Mus. Dresden ix, No. 5 : n. spp.
- Melanthoides niger*, E. Africa, SCHWARZ, p. 146, Deutsche ent. Zeitschr. 1900, n. sp.
- Mocquerysia* n. g. near *Pyrapractus*, p. 369, for *M. unicolor* n. sp., Madagascar, p. 370, FLEUTIAUX, Bull. Mus. Paris 1899.
- Monadicus biguttatus*, Bolivia, CANDÈZE, p. 92, Ann. Soc. ent. Belgique xlv, n. sp.
- Monocrepidius minusculus*, Sumatra, SCHWARZ, p. 90, Deutsche ent. Zeitschr. 1900; *M. bipartitus*, p. 313, *peruanus*, p. 314, *litturatus*, p. 315, Peru, *sextvittatus*, p. 316, Colombia, SCHWARZ, t. c.; *M. laceratus*, Goyaz, CANDÈZE, p. 85, Ann. Soc. ent. Belgique xlv : n. spp.
- Oistus submetallicus*, Costa Rica, CANDÈZE, p. 83, t. c. n. sp.
- Parapomachilius* n. g., p. 356, for *P. incertus*, Brazil, p. 339, *ambiguus*, Paraguay, p. 340, n. spp., SCHWARZ, Deutsche ent. Zeitschr. 1900.
- Parasaphes quinquesulcatus*, p. 114, *bicolor*, p. 115, Victoria, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.
- Phedomenus scriptus*, Madagascar, FLEUTIAUX, p. 368, Bull. Mus. Paris 1900, n. sp.
- Pleonomus laticornis*, Bucharra, REITTER, p. 88, Ent. Nachr. xxvi, n. sp.
- Pomachilioides* n. g., p. 356, for *P. cruciatus*, p. 344, *dimidiatus*, p. 345, *basalis*, *melanurus*, p. 346, n. spp., Peru, SCHWARZ, Deutsche ent. Zeitschr. 1900.
- Pomachilius angustulus*, Bolivia, CANDÈZE, p. 91, Ann. Soc. ent. Belgique xlv; *P. sulcifrons*, p. 330, *maculifrons*, p. 331, *marginalis*, p. 332, *spinosus*, p. 333, Peru, *discicollis*, *quadrinaculatus*, p. 334, *sextmaculatus*, p. 335, Brazil, *apicalis*, Peru, *pullus*, p. 336, *pusillus*, p. 337, Ecuador, *agrioides*, p. 338, *hamatus*, p. 339, Brazil, SCHWARZ, Deutsche ent. Zeitschr. 1900 : n. spp.
- Pristilophus madagascariensis*, Madagascar, FLEUTIAUX, p. 369, Bull. Mus. Paris 1899, n. sp.
- Psephus major*, *feralis*, Centr. Africa, *orientalis*, Philippines, CANDÈZE, p. 83, Ann. Soc. ent. Belgique xlv, n. spp.

- Psiloniscus quadrilineatus*, Mexico, SCHWARZ, p. 328, Deutsche ent. Zeitschr. 1900, n. sp.
- Semiotus intermedius* var. n. *delineatus*, CANDÈZE, p. 82, Ann. Soc. ent. Belgique xliv.
- S. sanguinolentus*, Bolivia, *exsolutus*, *flavangulus*, Colombia, p. 82, CANDÈZE, t. c.; *S. nigrolineatus*, Brazil, *antennatus*, Colombia, SCHWARZ, p. 306, Deutsche ent. Zeitschr. 1900 : n. spp.
- Spheniscosomus permacer*, Sumatra, CANDÈZE, p. 94, Ann. Soc. ent. Belgique xliv, n. sp.
- Spilus crassus*, Brazil, CANDÈZE, p. 84, t. c. n. sp.
- Stenopus* n. g. near *Heterocrepidius*, p. 307, for *S. angustus*, *elongatus*, p. 308, *rubripennis*, p. 309, n. spp., Cauca Valley, SCHWARZ, Deutsche ent. Zeitschr. 1900.
- Tabula* n. g. near *Glypheus*, p. 367, for *T. depressissima* n. sp., Madagascar, p. 368, FLEUTIAUX, Bull. Mus. Paris 1899.
- Tetrigus murrayi*, Christmas Is., WATERHOUSE, p. 100, Mon. Christmas Island, n. sp.
- Tilotarsus opacus*, p. 78, *adeloceroides*, p. 79, W. Africa, CANDÈZE, Ann. Soc. ent. Belgique xliv, n. spp.
- Trieres* n. g. near *Myrmodes*, for *T. ramitarsus* n. sp., Australia, CANDÈZE, p. 78, t. c.

## CEBRIONIDÆ.

Subterranean movement of larvæ, BOURGEOIS (161).

*Genecerus* referred to *Dascillidæ*, q. v., GAHAN, p. 27, P. Zool. Soc. London 1900.

## RHIPICERIDÆ.

- Ennometes*, a valid genus; *Callirhipis ruficornis* Gray, referred to it, BLACKBURN, p. 50, Tr. R. Soc. S. Austral. xxiv.
- Rhipidocera mystacina* and *femoralis* distinguished, BLACKBURN, p. 50, Tr. R. Soc. S. Austral. xxiv.
- Sandalus bourgeoisi*, China, THÉRY, p. 33, Naturaliste xxii; *S. chinensis*, China, FAIRMAIRE, p. 623, Ann. Soc. ent. France lxxviii : n. spp.

## DASCILLIDÆ.

- Genecerus nebulosus*, Somaliland, GAHAN, p. 26, pl. i, fig. 9, P. Zool. Soc. London 1900, n. sp.
- Microcara fuegensis*, Patagonia, BOURGEOIS, p. 111, Ann. Soc. ent. Belgique xliv, n. sp.

## MALACODERMIDÆ.

[Cf. ABEILLE (1, 2), BLACKBURN (123, 124), BORDAS (144), BOURGEOIS (131, 154-160, 162-164), FAIRMAIRE (389, 396), GAHAN (479, 480), GORHAM (512), OLIVIER (957-961), PIC (1009, 1010, 1021, 1023-1026, 1034), RETTTER (1092, 1101), SCHILSKY (1154), SHARP (1208), UHAGON (1346), XAMBEU (1420).]

Solier's types of *Lampyrides* referred to modern genera, OLIVIER, pp. 371, 372, Bull. Mus. Paris 1899.

Problematic Lycid larvæ described and discussed, pp. 77-79; a luminous larva or adult ♀ *Lampyrid*, pp. 79, 80, HANITSCH, J. Straits Asiat. Soc., No. 34.



- Remarkable Lycid or Lampyrid larva, pp. xxxv, figg. 4-4b, p. 383, SHARP, in Willey Results iv.
- An aquatic Lampyrid, ANNANDALE, p. 862, P. Zool. Soc. London 1900.
- Acantholycus integer*, Congo, BOURGEOIS, p. 141, Ann. Soc. ent. Belgique xliv, n. sp.
- Aneæodes* n. g. near *Charopus*, for *A. albicauda*, p. 164, *longiventris*, p. 165, n. spp. S. Africa, ABEILLE, Rev. Ent. franc. xix.
- Anthocomus apricus*, Natal, GORHAM, p. 78, Ann. Nat. Hist. v, n. sp.
- Apalochrus nitens*, Mashonaland, GORHAM, p. 80, t. c. n. sp.
- Attalus coloratus* var. n. *moraguesi*, p. 336, *abeillei* n. n. for *jocosus* Peyr. p. 352, UHAGON, An. Soc. Espan. xxix.
- Attalus atrocyaneus*, p. 339, *laufferi*, p. 341, Spain, UHAGON, t. c.; *A. abeillei*, Tunis, PIC, p. 53, Echange xvi; *A. (Mixis) simoni, exquisitus*, S. Africa, p. 176, *bizonatus*, Senegal, p. 177, ABEILLE, Rev. Ent. franc. xix; *A. ornatipennis*, Mashonaland, GORHAM, p. 77, Ann. Nat. Hist. v, n. spp.
- Calochromus cucullatus*, p. 56, *simillimus*, p. 57, *rostratus*, p. 58, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.
- Calopteron gloriosum, textile*, Ecuador, BOURGEOIS, p. 662, Ann. Soc. ent. France lxviii, n. spp.
- Cantharis*; for numerous varr. ? new, of palæarctic, see PIC, pp. 85, 86, Echange xvi; *C. discoidea* var. n. *carreti*, BOURGEOIS, p. 181, Bull. Soc. ent. France 1900; *C. livida* varr. n. *adusta ciliciensis*, BOURGEOIS, p. 152, Bodemeyer (131).
- C. tuniseus*, Tunis, PIC, p. 86, Echange xvi, ? n. sp.; *C. anatolica*, p. 151, bodemeyeri, p. 152, *eurynota*, p. 153, Asia Minor, BOURGEOIS, Bodemeyer (131) : n. spp.
- Cautires confluentis*, N. Guinea, BOURGEOIS, p. 420, Ann. Mus. Genova xl, n. sp.
- Chætomalachiæ æneus*, xxxvii 5, *staudingeri*, 6, Buchara, SCHILSKY, Käf. Eur., n. spp.
- Chalcas fairmairei*, Orinoco, BOURGEOIS, p. 118, Bull. Soc. ent. France 1900, n. sp.
- Chalicorus* = (*Cephaloncus* Westw. = *Trogliscus* Peyr.), ABEILLE, p. 170, Rev. Ent. franc. xix.
- C. ferox, 3-guttatus*, S. Africa, id. t. c. p. 169.
- Charopus cyanopterus*, Natal, GORHAM, p. 75, Ann. Nat. Hist. v, n. sp.
- Chauliognathus scabripennis*, Colombia, BOURGEOIS, p. 118, Bull. Soc. ent. France 1900, n. sp.
- Colotes hispanus*, Granada, UHAGON, An. Soc. Espan. xxix, p. 39; *C. sellatus*, S. Africa, ABEILLE, p. 165, Rev. Ent. franc. xix; *C. contaminatus*, Ceylon, ABEILLE, p. 178, t. c. n. spp.
- Colpomotopus* n. g. near *Cyrtosus*, p. 170, for *C. pithecus* n. sp., S. Africa, p. 171, ABEILLE, t. c.
- Danacæa tristis*, Turkestan, 9, *spinicollis*, Syria, 10, SCHILSKY, Käf. Eur. xxxvii; *D. albella*, Anatolia, REITTER, p. 86, Deutsche ent. Zeitschr. 1900 : n. spp.
- Dasytes incrassatus* Algeria, xxxvii, 1, *altaicus*, Altai, xxxvii, 2, SCHILSKY, Käf. Eur. n. spp.
- Dasytiscus vestitus* var. *henoni*, PIC, p. 88, Echange xvi.
- D. (Haplothrix) vagus*, xxxvii, 8, ? Mediterranean, SCHILSKY, Käf. Eur. n. sp.
- Diaphanes mammosus*, Sumatra, OLIVIER, p. 235, Ann. Soc. ent. Belgique xlv; *D. seminudus, wroughtoni*, India, OLIVIER, p. 47, Bull. Soc. ent. France 1900; *D. wroughtoni* ♂, *D. seminudus* ♀, figures, Du BUYSSON, p. 426, J. Bombay Soc. xiii : n. spp.
- Dinometopus* n. g. *Melyrides*, for *D. natalensis*, n. sp., Estcourt, GORHAM, p. 76, Ann. Nat. Hist. v.



- Ebæus nanschanensis*, Centr. Asia, REITTER, p. 160, Wien. ent. Zeitschr. xix, n. sp.
- Haplocnemus alluaudi*, Tunis, PIC, p. 165, Bull. Soc. ent. France 1900, n. sp.
- Haplolycus ustus* var. n. *tschoffeni*, BOURGEOIS, p. 145, Ann. Soc. ent. Belgique xliv.
- Hedybius anceps*, *marshalli*, Natal, GORHAM, p. 81, Ann. Nat. Hist. v ; *H. simoni*, p. 171, *longicoxis*, *sycophanta*, p. 172, *prænotatus*, *fasciculatus*, p. 173, *maculifer*, p. 174, S. Africa, ABEILLE, Rev. Ent. franc. xix : n. spp.
- Idgia foveifrons*, Formosa, FAIRMAIRE, p. 629, Ann. Soc. ent. France lxxviii, n. sp.
- Illops corniculatus* = (*Malachius*, *trabeatus* Fairm.), ABEILLE, p. 170, Rev. Ent. franc. xix.
- Laius tibialis*, Christmas Is., GAHAN, p. 102, pl. x, fig. 4, Mon. Christmas Island, n. sp.
- Lampyris tinctoria*, *imbecilla*, S. Africa, GORHAM, p. 84 Ann. Nat. Hist. v, n. spp.
- Leconteia* n. n. for *Pyractomena* Lee. nec Sol., OLIVIER, p. 371, Bull. Mus. Paris 1899.
- Lucidina clavareau*, Sumatra, OLIVIER, p. 234, Ann. Soc. ent. Belgique xlv, n. sp.
- Lucidota simoni*, Venezuela, OLIVIER, p. 62, Ann. Soc. ent. France lxi, n. sp.
- Luciola lusitanica*, larva and female, P. GROUVELLE, p. 315, Bull. Soc. ent. France 1900 ; *L. picea*, larva, OLIVIER, p. 236, Ann. Soc. ent. Belgique xlv.
- L. cavifrons*, Madagascar, with larva, FAIRMAIRE, pp. 361, 362, Bull. Soc. ent. France 1900 ; *L. recticollis*, Sumatra, OLIVIER, p. 237, Ann. Soc. ent. Belgique xlv : n. spp.
- Lycus distant* ♀, GORHAM, p. 83, Ann. Nat. Hist. v ; *L. obtusatus* var. n. *flavicans*, BOURGEOIS, p. 144, Ann. Soc. ent. Belgique xlv ; *L. latissimus* var. n. *mocquersyi*, BOURGEOIS, p. 658, Ann. Soc. ent. France lxxviii ; *L. rufosternalis* Bl. referred to *Erriclaes*, BOURGEOIS, p. 432, Ann. Mus. Genova xl ; *L. latissimus* var. n. *decoloratus*, BOURGEOIS, p. 141, Ann. Soc. ent. Belgique xlv, cf. also *Acantholycus*, *Haplolycus*.
- Lycus durivieri*, Congo, BOURGEOIS, p. 142, Ann. Soc. ent. Belgique xlv ; *L. cornipennis*, p. 659, *prodigiosus*, p. 660, Sierra Leone, *L. (Lopholycus) staudingeri*, p. 658, Africa, *L. (Thoracocalon) brevirostris*, Ecuador, p. 661, BOURGEOIS, Ann. Soc. ent. France lxxviii : n. spp.
- Lygisterus oberthuri*, p. 664, *fastuosus*, p. 665, Bolivia, BOURGEOIS, t. c. n. spp.
- Malachius montanus* var. n. *viridistratus*, BOURGEOIS, p. 156, Bodemeyer (131).
- Malchinus obscuripes*, Constantinople, PIC, p. 87, Echange xvi, n. sp.
- Malthinus* ; characters of numerous European, BOURGEOIS, pp. 91–94, Bull. Soc. ent. France 1900 ; *M. pallidipennis* var. *laterufus*, *batnensis* var. *atricipes*, PIC, p. 54, Echange xvi ; *M. maritimus* redescribed, PIC, p. 384, Bull. Soc. ent. France 1900.
- M. laticollis*, *mathiewi*, Algeria, p. 14, *maculipennis*, Syria, *batnensis*, *pallidipennis*, Algeria, p. 15, PIC, Bull. Soc. zool. France xxv ; *M. externus*, Algeria, *caifensis*, Syria, *rosinæ*, Asia Minor, PIC, p. 37, Echange xvi ; *M. brevior*, p. 54, *tamarisci*, p. 55, Algeria, PIC, t. c. ; *M. algericus*, Rio-Salado, PIC, p. 19, t. c. n. sp. ? ; *M. kraatzi*, Spain, *delagrangiei*, Syria, PIC, p. 61, t. c. ; *M. (Progentes) incrassicornis*, p. 86, *femoralis*, Algeria, *scriptipennis*, Spain, p. 87, PIC, t. c. n. spp. ? ; *M. varus*, Algeria, BOURGEOIS, p. 94, Bull. Soc. ent. France 1900 ; *M. mathiewi*, Oran, PIC, p. 124, Bull. Soc. ent. France 1900 : n. spp.

- Melyris insularis*, Sokotra, GAHAN, p. 8, Bull. Liverp. Mus. iii, n. sp.  
*Metacantharis araxicola* var. n. *disparipennis*, BOURGEOIS, p. 153, Bode-meyer (131).  
*M. taurigrada* Asia Minor, id. p. 154, t. c. n. sp.  
*Metriorrhynchus insignipennis*, Tasmania, p. 52, *cliens*, *flagellatus*, p. 53, *miles*, *mentitor*, p. 54, *paradoxa*, *eremita*, p. 55, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.  
*Myrmecophasma nietneri*, gen. et sp., described, ABEILLE, pp. 178, 179, Rev. Ent. franc. xix.  
*Ototreta* n. g. near *Luciola*, for *O. weyersi*, p. 237, *fornicata*, p. 238, n. spp. Sumatra, OLIVIER, Ann. Soc. ent. Belgique xlv; *O. grvida*, Borneo, OLIVIER, p. 285, Bull. Soc. ent. France 1900, n. sp.  
*Pagurodactylus* n. g., p. 78, *Malachiüdes*, for *P. viticeps* n. sp., Natal, p. 79, GORHAM, Ann. Nat. Hist. v.  
*Philhedonus* n. g., near *Hedybius*, for *P. coronatus* n. sp., Mashonaland, GORHAM, p. 82, t. c.  
*Phosphænopterus montandoni*, Wallachia, BOURGEOIS, p. 337, Bull. Soc. ent. France 1900, n. sp.  
*Photinus ineptus*, Venezuela, OLIVIER, p. 64, Ann. Soc. ent. France lxi, n. sp.  
*Plateros alternatus*, Colombia, BOURGEOIS, p. 663, Ann. Soc. ent. France lxxviii, n. sp.  
*Podabrus angustus*, China, FAIRMAIRE, p. 624, Ann. Soc. ent. France lxxviii, n. sp.  
*Podistrina peyerimhoffi*, Alpes maritimes, BOURGEOIS, p. 379, Bull. Soc. ent. France 1900; *P. algirica*, Algeria, BOURGEOIS, p. 284, t. c.; *P. normandi*, Tunis, PIC, p. 77, Echange xvi : n. spp.  
*Ponyalis* n. g. near *Lyponia*, for *P. laticornis*, n. sp. China, FAIRMAIRE, p. 623, Ann. Soc. ent. France lxxviii.  
*Prosthaptus* n. g., near *Malthodes*, p. 85, for *P. claudus*, n. sp., Mashonaland, p. 86, GORHAM, Ann. Nat. Hist. v.  
*Pseudocolotes* n. g. near *Colotes*, p. 166, for the following new spp. from S. Africa, *cribripennis*, *plagiatus*, p. 167, *buccator*, *agnatus*, p. 168, ABEILLE, Rev. Ent. franc. xix.  
*Psilothrix latipennis*, Rhodes, PIC, p. 77, Echange xvi, n. sp.  
*Rhagonycha nigrocapitata*, *lyncea*, Asia Minor, BOURGEOIS, p. 155, Bode-meyer (131) n. spp.  
*Rhagophthalmus gibbosulus*, China, FAIRMAIRE, p. 624, Ann. Soc. ent. France lxxviii, n. sp.  
*Selenurus fernshawensis*, Victoria, BLACKBURN, p. 115, Tr. R. Soc. S. Austral. xxiv, n. sp.  
*Telephorus pulchellus* var. ? *notophilus*, BLACKBURN, p. 116, t. c.  
*T. confusus*, *hypopelius*, p. 625, *hexicanthus*, *fraternus*, p. 626, *bigibbulus*, *monochrous*, p. 627, *foveicollis*, *limbolarius*, p. 628, *sanguinosus*, p. 629, China, FAIRMAIRE, Ann. Soc. ent. France lxxviii, n. spp.  
*Trichalus cyanescens*, p. 422, *languidus*, New Guinea, *blanchardi*, Aru, p. 423, *imitator*, p. 424, *incrassatus*, p. 425, *sordescens*, p. 426, *flabel-latus*, New Guinea, *ternatensis*, Ternate, p. 427, *albertisi*, p. 428, *cerberus*, p. 429, New Guinea, *perplexus*, Ternate, p. 430, BOURGEOIS, Ann. Mus. Genova xl; *T. funereus*, Victoria, BLACKBURN, p. 51, Tr. R. Soc. S. Austral. xxiv : n. spp.  
*Trichocæbe ramicornis*, Turkestan, SCHILSKY, Käf. Eur. xxxvii 4, n. sp.  
*Xylobanus semiflabellatus* var. n. *xanthaspis*, BOURGEOIS, p. 146, Ann. Soc. ent. Belgique xlv.  
*X. fuscatus*, Congo, id. l. c., n. sp.  
*Zelotypus* n. g. for *Collops violaceipennis* Motsch., ABEILLE, p. 180, Rev. Ent. franc. xix.  
*Zygia lineata* var. n. *atriceps*, PIC, p. 9, Mt. Mus. Hamburg xvii, Beih. II.

## CLERIDÆ.

- [Cf. BLACKBURN (124), GORHAM (512), KRAATZ (766, 770), LOHDE (825), PIC (1036), SCHENKLING (1152, 1153).]  
 Catalogue of *Cleridæ*, upwards of 1800 species, LOHDE (825).  
 Revision of Australian, with tabulation of genera and correction of many generic names, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, pp. 116-140.
- Aulicus cræsus*, p. 127, *dives*, p. 128, *nigrohirtus*, p. 129, *robustus*, *mundus*, p. 131, *eremita*, *amabilis*, p. 133, *cribratus*, p. 134, *modestus*, p. 135, Australia, BLACKBURN, t. c. n. spp.
- Axina parcepunctata*, p. 388, *basalis*, p. 389, *conspicua*, *plagiata*, p. 390, *munda*, p. 391, Goyaz, SCHENKLING, Deutsche ent. Zeitschr. 1900, n. spp.
- Callimerus horni*, Ceylon, KRAATZ, p. 189, t. c. n. sp.
- Clerus latesellatus*, Mexico, SCHENKLING, p. 18, Mt. Mus. Hamburg xvii;  
*C. subjunctus*, *fasciicollis*, p. 393, *fasciatus*, p. 394, *rufimanus*, *faustus*, p. 395, S. America, SCHENKLING, Deutsche ent. Zeitschr. 1900 : n. spp.
- Corynetes concolor*, Natal, GORHAM, p. 75, Ann. Nat. Hist. v, n. sp.
- Cymatodera guatemalensis*, Guatemala, SCHENKLING, p. 385, Deutsche ent. Zeitschr. 1900, n. sp.
- Dolichopsis auronitens*, Natal, GORHAM, Ann. Nat. Hist. v, n. sp.
- Dysphocera* n. g. near *Trogodendron*, p. 19, for *D. mirabilis*, n. sp. Rockhampton, p. 20, SCHENKLING, Mt. Mus. Hamburg xvii.
- Emmepus pallidipennis*, Algeria, PIC (1036) and Frelon viii, p. 1 sep. pag., n. sp.
- Epiclines eburneocincta* var. n. *nigripes*, SCHENKLING, Deutsche ent. Zeitschr. 1900, p. 397.
- E. similis*, Chili, SCHENKLING, p. 397, t. c. n. sp.
- Epiphlocus simplex*, Bolivia, p. 397, *parvulus*, Goyaz, p. 398, SCHENKLING, t. c. n. spp.
- Gyponyx*, characters, SCHENKLING, p. 14, Mt. Mus. Hamburg xvii.
- G. tricolor*, p. 15, *pallidus*, p. 17, S. Africa, SCHENKLING, t. c. n. spp.
- Ichneæ præusta* var. n. *femoralis*, SCHENKLING, p. 401, Deutsche ent. Zeitschr. 1900.
- I. procera*, Peru, p. 399, *I. (Pseudichneæ) eliminata*, Goyaz, p. 400, SCHENKLING, t. c. n. spp.
- Isolemidia bipunctata*, Goyaz, SCHENKLING, p. 399, t. c. n. sp.
- Natalis debilis*, S. Australia, BLACKBURN, p. 120, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Neoscrobiger* n. g. p. 136, type *Opilo patricius* Klug, with *N. rauciceps* n. sp., Victoria, p. 137, BLACKBURN, t. c.
- Necrobia foveicollis*, Brazil, SCHENKLING, p. 20, Mt. Mus. Hamburg xvii, n. sp.
- Opilo nigerrimus*, Ikutha, KRAATZ, p. 296, Deutsche ent. Zeitschr. 1900, n. sp.
- Orthrius carinifrons*, Japan, SCHENKLING, p. 17, Mt. Mus. Hamburg xvii, n. sp.
- Pelonium ramosum*, Bahia, p. 402, *subapicale*, Amazons, p. 403, *ruficeps*, *jucundum*, p. 404, *placidum*, p. 405, Goyaz, *P. ? tuberculipenne*, Chili, p. 406, *P. tarsale*, Goyaz, p. 407, *meieri*, S. America ?, *kraatzi*, Goyaz, p. 408, *geminum*, Peru, p. 409, SCHENKLING, Deutsche ent. Zeitschr. 1900, n. spp.
- Phlæocopus undulatus*, S. Africa, GORHAM, p. 72, Ann. Nat. Hist. v, n. sp.
- Platynopectera pectoralis*, Goyaz, SCHENKLING, p. 401, Deutsche ent. Zeitschr. 1900, n. sp.

- Priocera unifasciata*, Brazil, SCHENKLING, p. 14, Mt. Mus. Hamburg xvii;  
*P. podagrica*, p. 385, *quadrinotata*, p. 386, *angulata*, p. 387, Goyaz, SCHENKLING, Deutsche ent. Zeitschr. 1900 : n. spp.  
*Stigmatium ceylonicum*, Ceylon, KRAATZ, p. 190, t. c. n. sp.  
*Tarsostenodes* n. g. for *T. simulator* n. sp. Victoria, p. 139, BLACKBURN, Tr. R. Soc. S. Austral. xxiv.  
*Tenerus laterimaculatus*, Ceylon, KRAATZ, p. 192, Deutsche ent. Zeitschr. 1900, n. sp.  
*Thalerocnemis* n. n. for *Chlorocnemis* Kuwert, LOHDE, p. 145, Ent. Zeit. Stettin lxi.  
*Thanasimus bifasciatus*, *ceylonicus* Ceylon, KRAATZ, p. 191, Deutsche ent. Zeitschr. 1900, n. spp.  
*Tillus compressicornis* Kl. referred to *Philocalus*, GORHAM, p. 71, Ann. Nat. Hist. v.  
*T. palestinus*, Jericho, PIC, Frelon viii, p. 2, sep. pag.; *T. capensis*, S. Africa, SCHENKLING, p. 13, Mt. Mus. Hamburg xvii : n. spp.  
*Trichodes turkestanicus* var. n. *apicalis*, p. 99, pl. iv, fig. 3a, BRANCSIK, Jahresh. Ver. Trencsen xxi.  
*T. tugenanus*, Natal, GORHAM, p. 73, Ann. Nat. Hist. v, n. sp.

## PTINIDÆ.

- [Cf. ALLUAUD (22), GAHAN (478, 479), HOPKINS (599), PIC (1007, 1016, 1018, 1019, 1020, 1024, 1031, 1032), SCHILSKY (1154).]  
 Stridulating organs of *Anobiides*, GAHAN (478).  
 Notes on Schilsky's Heft. xxxvi of Küster, PIC, pp. 6, 7, Miscell. ent. viii.  
*Cænocara boleti*, Madagascar, ALLUAUD, p. 21, Bull. Soc. ent. France 1900, n. sp.  
*Ermobius oertzeni*, Greece, SCHILSKY, Käf. Eur. xxxvii, 14, n. sp.  
*Mesocalopus substriatus*, Caucasus, SCHILSKY, op. cit. 15, n. sp.  
*Neoptinus* n. g. p. 102, for *N. parvus* n. sp., Christmas Is., p. 103, pl. x, fig. 10, GAHAN, Monogr. Christmas Island.  
*Paranobium* n. g. for *P. posticum* n. sp., Christmas Is., pl. x, fig. 9, GAHAN, p. 104, t. c.  
*Ptinus krugeri* n. n. for *lepidus* Pér. nec Villa, PIC, p. 289, Bull. Soc. ent. France 1900; *P. martini* var. *rubi*, PIC, p. 55, Echange xvi.  
*P. (Pseudoptinus) subcarnatus*, Algeria, PIC, p. 55, t. c.; *P. (Pseudoptinus) anatolicus*, Anatolia, *P. circassicus*, Circassia, p. 48, *leuthneri*, Syria, p. 49, PIC, Bull. Soc. ent. France 1900; *P. (Gynopterius) californicus*, California, PIC, p. 89, Echange xvi; *P. unilineatus* Mexico, p. 252, *submetallicus* Brazil, p. 253, *hirtithorax*, *gorhami*, Chili, p. 254, PIC, Ann. Soc. ent. Belgique xlv; *P. groulti*, *obscuripes*, Brazil, PIC, p. 211, Naturaliste xxii; *P. chilensis*, Valparaiso, PIC, p. 10, Mt. Mus. Hamburg xvii, Beih. ii : n. spp.  
*Thaptor variegatus*, *tessellatus*, *brevipennis*, Brazil, PIC, p. 68, Naturaliste xxii, n. spp.  
*Theca limnichoides*, Madagascar, ALLUAUD, p. 20, Bull. Soc. ent. France 1900; *T. (Sculptotheca) hilleri*, Japan, SCHILSKY, Käf. Eur. xxxvii, 16 : n. sp.  
*Trichodesma nigromaculata*, Burma, *regalis*, E. India, *goyavensis*, Brazil, PIC, p. 57, Naturaliste xxii, n. spp.  
*Xyletinus suturatus*, Madagascar, ALLUAUD, p. 20, Bull. Soc. ent. France 1900, n. sp.



## BOSTRICHIDÆ.

- Dinoderus substratus*, synonymy, DONISTHORPE, p. 16, Ent. Rec. xii.  
*Lyctus canaliculatus* as an injurious insect, BUREAU (195).  
*Micrapate* Casey = (*Bostrychulus* Lesne), LESNE, p. 46, Bull. Soc. ent. France 1900.  
*Patea* Casey, is part of *Dinoderus*, LESNE, l. c.  
*Phonapate porrecta*, Congo, LESNE, p. 426, Ann. Soc. ent. Belgique xliv, n. sp.  
*Stephanopachys* n. g. for *Dinoderus substriatus* Payk., WATERHOUSE, Ann. Nat. Hist. 1888, p. 348. [Omitted from Zoological Record previously; cf. DONISTHORPE, Ent. Rec. xii, p. 17.]  
*Xylopertha picea* Ol. = (*heydeni* Schilsky), LESNE, p. 47, Bull. Soc. ent. France 1900; *X. pustulata, chevrieri*, synonymy, LESNE, p. 11, t. c.  
*X. transvena*, Congo, LESNE, p. 426, Ann. Soc. ent. Belgique xlv, n. sp.

## CROIDÆ.

[Cf. CASEY (229), PERKINS (990), SCHILSKY (1154).]

- Apterocis* n. g. p. 265, with *A. lanaiensis*, Lanai, pl. x, fig. 14, *montanus*, Maui, p. 266, *variabilis*, Oahu, *hawaiiensis*, p. 267, *rufo-notatus*, Hawaii, *impunctatus*, Oahu, *variegatus*, Maui, p. 268, *ornatipennis*, Lanai, fig. 15, *strigosus*, Molokai, p. 269, *subaneus*, Maui, *hystrix*, Lanai, p. 270, PERKINS, Fauna Hawaiiensis ii, n. spp.  
*Cis nigrorugosus*, Amur, xxxvii, 66, *græcus*, Morea, 68, *sibiricus*, Amur, 75, SCHILSKY, Käf. Eur., n. spp.  
*Cis breviformis*, Molokai, p. 255, *nesiotes, cognatissimus*, Kauai etc., p. 256, *unicus*, Hawaii, p. 258, *simulator*, Maui, p. 259, *kauaiensis*, Kauai, p. 261, *molokaiensis*, Molokai, *haleakalæ*, Maui, pl. x, fig. 17, *mirabilis*, Kauai, p. 262, *fallax*, Oahu, *minus*, Maui, p. 263, *angustiformis*, Oahu, p. 265, PERKINS, Fauna Hawaiiensis ii, n. spp.  
*Maphæa* n. g. near *Plesiocis*, p. 165, for *M. blaisdelli* n. sp., California, p. 166, CASEY, J. N. York Ent. Soc. viii.

## TENEBRIONIDÆ and RHYSOPAUSSIDÆ.

- [Cf. ALLUAUD (26), ARROW (36), CHOBOUT (244, 246), BLACKBURN (123, 124), BORDAS (144), BRANCSIK (167), FAIRMAIRE (389 to 393), FLEISCHER (427), GAHAN (478, 983), GESTRO (492), REITTER (131, 1092, 1094, 1097, 1098, 1099, 1101), VAULOGER (1352), XAMBEU (1420).]  
List of *Rhysopausoidæ*, GESTRO, Ann. Mus. Genova xl, pp. 746-748.  
*Adelostoma granti*, Sokotra, GAHAN, p. 10, Bull. Liverp. Mus. iii, n. sp.  
*Agræcus* n. g. near *Amarsenes*, p. 21, for *A. chalcoides* n. sp., Madagascar, p. 22, FAIRMAIRE, Bull. Soc. ent. France 1900.  
*Amarygmus funebris*, Christmas Is., ARROW, p. 107, Monogr. Christmas Island, n. sp.  
*Amiantus sexcostatus*, Somaliland, GAHAN, p. 28, P. Zool. Soc. London 1900, n. sp.  
*Ammozoum*, the species, REITTER, p. 300, Ent. Nachr. xxvi.  
*Anemia sakalava*, Madagascar, ALLUAUD, p. 18, Bull. Mus. Paris 1900, n. sp.  
*Arthrodinus* n. g. for an undetermined sp. from Teneriffe, REITTER, p. 299, Ent. Nachr. xxvi.  
*Arthrodosis* n. g. for part of *Arthrodeis*, REITTER, p. 299, Ent. Nachr. xxvi.

- Asidesthes* n. g. near *Scotinesthes*, p. 246, for *A. perrieri* n. sp., Madagascar, p. 247, FAIRMAIRE, Ann. Soc. ent. Belgique xlv.
- Bariacus* n. g. near *Azarelius*, for *B. costulatus* n. sp., Borneo, FAIRMAIRE, p. 45, Bull. Soc. ent. France 1900.
- Blaps medusa*, Centr. Asia, REITTER, p. 161, pl. i, fig. 6, Wien. ent. Zeit. xix, n. sp.
- Bradymerus seminitidus*, Christmas Is., ARROW, p. 106, Monogr. Christmas Island, n. sp.
- Camaria microdera*, China, FAIRMAIRE, p. 630, Ann. Soc. ent. France lxxviii, n. sp.
- Chalcopterus kochi*, S. Australia, BLACKBURN, p. 59, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Crypticus quisquilius* var. n. *opacus*, BRANCSIK, p. 100, Jahresh. Ver. Trencsen. xxi.
- Dendarus transcaspicus*, Ashabad, BRANCSIK, p. 101, t. c. n. sp.
- Deretus* n. g. *Helopinae* near *Eubæus*, for *D. denticollis*, n. sp. Sokotra, GAHAN, p. 10, Bull. Liverp. Mus. iii.
- Diaphanidus* n. g. near *Erodinus*, p. 299, for *Arthrodeis antennatus* Reitt. and *D. semenowi* n. sp., Turkestan, p. 302, REITTER, Ent. Nachr. xxvi.
- Dichillus explanatus*, *pusillus*, Buchara, REITTER, p. 54, Deutsche ent. Zeitschr. 1900, n. spp.
- Dila persiana*, Persia, 16-*striata*, Turkestan, p. 295, *bucharica*, Buchara, p. 296, REITTER, Ent. Nachr. xxvi, n. spp.
- Erodinus* n. g. for an undetermined species from Teneriffe, REITTER, p. 299, t. c.
- Euglyptonotus* n. g. *Rhyssopaussidæ* for *E. magretti* n. sp., Erythrea, GESTRO, p. 744, Ann. Mus. Genova xl.
- Eusyntelia opacicollis*, Sokotra, GAHAN, p. 9, Bull. Liverp. Mus. iii, n. sp.
- Gonodera rufœnea*, Asia Minor, REITTER, p. 159, Bodemeyer (131), n. sp.
- Helopini*, monograph of N. African, VAULOGER, Ann. Soc. ent. France lxxviii, pp. 669-722.
- Helops*; cf. also *Pelorinus*; *H. nitidicollis* varr. n. *thalassinus*, *nigricans*, p. 688, *obtusatus* var. n. *deserticola*, p. 688, *batnensis* varr. n. *soricinus*, *biskrensis*, p. 692, *echinatus* n. n. for *hirtus* Seidl. nec Muls., p. 692, VAULOGER, t. c.
- H. diabolinus*, Ashabad, BRANCSIK, p. 101, pl. iv, fig. 5, Jahresh. Ver. Trencsen. xxi; *H. (Stenomax) verrucosus*, *martini*, p. 683, *litigiosus*, p. 684, *H. (Diastixus) pulvinatus*, p. 687, *piger*, p. 688, *H. (Gunarus) rufulus*, p. 689, *H. (Catomidius) ciliatus*, *comatus*, *anthicoides*, p. 690, *submetallicus*, *capillatus*, p. 693, *H. (Catomes) amabilis*, *sicardi*, p. 695, VAULOGER, t. c.; *H. bodemeyeri*, p. 156, *H. (Odocnemis) protinus*, *lordiscelis*, p. 157, *H. (Cylindrinotus) funestoides*, p. 158, Asia Minor, REITTER, Bodemeyer (131) : n. spp.
- Histeromorphus undatus*, Sokotra, GAHAN, p. 8, Bull. Liverp. Mus. iii, n. sp.
- Hypocilibe veteriosa*, S. Australia, BLACKBURN, p. 140, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Læna pici*, Syria, REITTER, p. 87, Deutsche ent. Zeitschr. 1900, n. sp.
- Melanimon sabulorum*, Tunis, CHOBOUT, p. 31, Bull. Soc. ent. France 1900, n. sp.
- Misolampus goudoti*, Algeria, VAULOGER, p. 674, Ann. Soc. ent. France lxxviii, n. sp.
- Nyctelia longiplicata*, Patagonia, FAIRMAIRE, p. 111, Ann. Soc. ent. Belgique xlv, n. sp.
- Nyctobates microcephalus*, China, FAIRMAIRE, p. 629, Ann. Soc. ent. France 1900; *N. carbonaria*, Christmas Is., ARROW, p. 106, Monogr. Christmas Island : n. spp.
- Opatrum dubium*, Christmas Is., ARROW, p. 105, t. c. n. sp.

- Palorus orientalis*, Transcaucasus, *subfilum*, Biskra, FLEISCHER, p. 237, Wien. ent. Zeit. xix, n. spp.
- Parecatus* n. g. for *Scotinesthes costulatus*, and *P. plicatulus* n. sp., Madagascar, FAIRMAIRE, p. 245, Ann. Soc. ent. Belgique xlv.
- Pelorusinus* subg. n. of *Helops*, VAULOGER, p. 680, Ann. Soc. ent. France lxviii; *H. (P.) linearis* n. n. for *cribripennis* All. nec Lucas, *H. (P.) villosipennis* var. n. *normandi*, p. 681, *anthracinus* var. *tardus* n. n. = (*obesus* Luc.), p. 681, id. t. c.
- Phaleria bedeli*, Algeria, CHOBOUT, p. 340, Bull. Soc. ent. France 1900, n. sp.
- Platyscelis (Oodescelis) sahlbergi*, Turkestan, REITTER, Wien. ent. Zeit. xix, n. sp.
- Praogena nigra*, Somaliland, GAHAN, p. 30, P. Zool. Soc. London 1900, n. sp.
- Prosodes rugicostata*, *vincens*, *suturangula*, Centr. Asia, REITTER, p. 55, Deutsche ent. Zeitschr. 1900, n. spp.
- Rhophobas asperatus* Motsch. = (*Nyctobates granifera* Fairm.), KOLBE, p. 74, Ent. Nachr. xxvi.
- Rhytidonota exigua*, p. 8, *socia*, *R. ? tibialis*, p. 9, Sokotra, GAHAN, Bull. Liverp. Mus. iii; *R. robusta*, Somaliland, GAHAN, p. 28, pl. i, fig. 13, P. Zool. Soc. London 1900, n. sp.
- Scotinesthes asperulus*, Madagascar, FAIRMAIRE, p. 245, Ann. Soc. ent. Belgique xlv, n. sp.
- Sepidium magnum*, pl. i, fig. 12, p. 29, *bilobatum*, fig. 14, p. 30, Somaliland, GAHAN, P. Zool. Soc. London 1900, n. spp.
- Setenis* Knoch = (*Pseudobates* Fairm.), *S. coracina* Knoch = (*Iphthimus cupripennis* Boh.), *S. fairmairei* n. n. for *coracina* Fairm., KOLBE, p. 74, Ent. Nachr. xxvi.
- Sphenaria reitteri*, Ashabad, BRANCSIK, p. 99, Jahresh. Ver. Trencsen. xxi, n. sp.
- Strongylium forcipicollis*, Borneo, FAIRMAIRE, p. 45, Bull. Soc. ent. France 1900, n. sp.
- Tagona longicollis*, Ashabad, BRANCSIK, p. 100, pl. iv, fig. 4, Jahresh. Ver. Trencsen. xxi, n. sp.
- Toxicum antilope*, Christmas Is., ARROW, p. 106, Monogr. Christmas Island, n. sp.
- Trachyscelis anisotomoides* Fairm. is a *Liodes*, BEDEL, p. 248, Bull. Soc. ent. France 1900.
- Trigonocnemis holdereri*, Centr. Asia, REITTER, p. 161, Wien. ent. Zeit. xix, n. sp.
- Zophosis undulata*, Sokotra, GAHAN, p. 8, Bull. Liverp. Mus. iii, n. sp.

## CISTELIDÆ.

- Bratyna apicalis* ♀, KRAATZ, p. 10, Deutsche ent. Zeitschr. 1900.
- Cistela kauaiensis*, pl. x, fig. 22, *nigricollis*, Kauai, p. 248, *subænescens apicalis*, Oahu, *montana*, Kauai, p. 249, *konæ*, Hawaii, p. 250, PERKINS, Fauna Hawaiiensis ii, n. spp.
- Cistelomorpha nigrosparsa*, Yunnan, p. 630, *bina*, Formosa, *atripes*, p. 631, *infranigra*, p. 632, China, FAIRMAIRE, Ann. Soc. ent. France lxviii, n. spp.
- Cteniopus luteus* var. n. *obscurithorax*, PIC, p. 189, Act. Soc. Espan. 1900.
- Labetis hawaiiensis*, Hawaii, p. 250, *comitans*, Kauai, pl. x, fig. 21, p. 251, PERKINS, Fauna Hawaiiensis ii, n. spp.

## MELANDRYIDÆ.

[Cf. CASEY (229), FAIRMAIRE (390), SEMENOW (1196).]

*Abstrulia* n. g. *Tetratomini*, p. 168, for *tessellata* Melsh. and *variegata*, *maculata* n. spp., N. America, p. 169, CASEY, J. N. York Ent. Soc. viii.

*Eupisenus* n. g. *Tetratomini* for *Triphyllus elongatus* Lec., CASEY, p. 170, t. c.

*Incolia* n. g. *Tetratomini*, p. 169, for *I. longipennis* n. sp., N. America, p. 170, CASEY, t. c.

*Mystarus relictus*, Buchara, SEMENOW, p. 685, Horæ Soc. ent. Ross. xxxiv, n. sp.

*Pisenus* n. g. *Tetratomini*, p. 171, for *humeralis* Kirby = (*Triphyllus ruficornis* Lec.), and *P. pubescens* n. sp., Virginia, p. 172, CASEY, J. N. York Ent. Soc. viii.

*Tolmerus* n. g. near *Melandrya*, p. 111, for *T. longipennis* n. sp., Patagonia, p. 112, FAIRMAIRE, Ann. Soc. ent. Belgique xlv.

## LAGRIIDÆ.

*Chlorophila carolina*, p. 632, *semenowi*, p. 633, China, FAIRMAIRE, Ann. Soc. ent. France lxxviii, n. spp.

*Entypodera impressithorax*, E. Africa, PIC, p. 34, Echange xvi, n. sp.

*Nemostira rugulicollis*, China, FAIRMAIRE, p. 633, Ann. Soc. ent. France 1900, n. sp.

## ANTHICIDÆ, PEDILIDÆ.

[Cf. PIC (1000–1005, 1014, 1017, 1021, 1022, 1024, 1026, 1031, 1035), SCHILSKY (1154), SEMENOW (1194–1196).]

*Anthicus amicitiae* and other species described by Dufour, synonymy, PIC, pp. 102, 103, Bull. Mus. Paris 1900; *A. floralis* var. n. *massauensis*, PIC, p. 574, Ann. Mus. Genova xl; *A. reitteri* var. n. *reductus*, BRANCSIK, p. 102, pl. iv, fig. 6, Jahresh. Ver. Trencsen. xxi; *A. betsi-bokensis* n. n. for *quadriceps* Fairm. nec Desb., PIC, p. 289, Bull. Soc. ent. France 1900; *A. insignis* var. n. *tripolitanus*, PIC, p. 165, t. c.

*A. ferianensis*, Tunis, PIC, p. 56, Echange xvi; *A. densifer*, *anticemaculatus*, *subcrucifer*, Turkestan, *A. (Aulacoderus) peyroni*, Syria, PIC, p. 78, t. c.; *A. haasi*, p. 89, *arcuaticeps*, p. 90, Turkestan, PIC, t. c.; *A. opaciceps*, *tschoffeni*, Congo, PIC, p. 429, Ann. Soc. ent. Belgique xlv; *A. schmitti*, *morogorensis*, E. Africa, PIC, p. 36, Echange xvi; *A. bellii*, Erythraea, PIC, p. 574, Ann. Mus. Genova xl; *A. (Pseudoleptalcus) gibbipennis*, *A. papuus*, p. 603, *quadrinotatus*, *hirtipennis*, *submetallicus*, p. 604, *adonis*, *albertisi*, p. 605, *loriae*, *rugosicollis*, p. 606, *neoguineensis*, *dilensis*, *insulanus*, p. 607, *alfurus*, *dilatipennis*, p. 608, New Guinea, PIC, t. c.; *A. difformipes*, *brunneonotatus*, *diversiceps*, *diversipes*, Sumatra, PIC, p. 759, Ann. Soc. ent. France lxxviii; *A. (Pseudoleptalcus) bidentatus*, *collaris*, p. 797, *monstrosicollis*, Sumatra, *macassarensis*, *dilutus*, Celebes, p. 798, *A. sinuatipes*, Mentawai, *puncticeps*, Celebes, p. 799, *insolitus*, Bali, *puncticollis*, *modiglianii*, *balighensis*, Sumatra, p. 800, *nigricolor*, Mentawai, p. 801, PIC, Ann. Mus. Genova xl; *A. inflatithorax*, p. 138, *A. (Ischyropalpus) venezuelensis*, Venezuela, *A. (Aulacoderus) ganglbaueri*, E. Africa, p. 139, PIC, Verh. Ges. Wien l : n. spp.

*Curtotomoderus* subg. n., see *Tomoderus*.

*Formicomus vaelbroeckii*, Congo, PIC, p. 428, Ann. Soc. ent. Belgique xlv ;



- F. schmitti, ganglbaueri*, E. Africa, PIC, p. 35, Echange xvi; *F. feberi*, Tenasserim, PIC, p. 138, Verh. Ges. Wien I; *F. modiglianii, gibbithorax*, Mentawai, p. 794, *tibialis*, Java, *beccarii*, Celebes, *robustipes*, Mentawai, p. 795, *sumatrensis, siboganus*, p. 796, *atricolor*, Sumatra, p. 797, PIC, Ann. Mus. Genova xl : n. spp.
- Hylophilus atriceps* n. n. for *X. nigricollis* Champ., PIC, p. 231, Bull. Soc. ent. France 1900.
- H. macassarensis, beccarii*, Celebes, *latipennis*, p. 738, *modiglianii*, p. 739, *carinatus, gestroi, pallidicolor, diversipes, tibialis*, p. 740, Sumatra, PIC, Ann. Mus. Genova xl; *H. theresæ, longithorax*, p. 755, *nigrofasciatus, grandiceps, nigromaculatus, subsericeus*, p. 756, *donckieri, curtithorax*, p. 757, Sumatra, PIC, Ann. Soc. ent. France lxviii; *H. peruvianus*, p. 19, *staudingeri*, p. 20, Peru, PIC, Echange xvi, ? n. spp. : n. spp.
- Macratia helferi* var. n. *bimaculata*, PIC, p. 138, Verh. Ges. Wien I.
- M. severini*, Congo, PIC, p. 430, Ann. Soc. ent. Belgique xlv; *M. donckieri, limbata, rubrofasciata*, Sumatra, PIC, p. 760, Ann. Soc. ent. France lxviii; *M. testaceicornis*, Celebes, p. 791, *doriæ, hirsuta*, Borneo, p. 792, PIC, Ann. Mus. Genova xl; *M. beccarii*, p. 597, *loriæ, coniceps, gestroi*, with var. *densata*, p. 598, *opacicollis, maculipennis*, p. 599, *albertisi, distincticornis, rubriceps*, p. 600, with var. *neoguineensis*, p. 601, New Guinea, PIC, t. c. : n. spp.
- Macrotomoderus* n. g. near *Cotes*, for *M. latipennis* n. sp., Sumatra, PIC, p. 741, t. c.
- Mecynotarsus ahngerii*, Transcaspian, SEMENOW, p. 598, Horæ Soc. ent. Ross. xxxiv; *M. sumatrensis*, Sumatra, PIC, p. 758, Ann. Soc. ent. France lxviii; *M. loriæ*, New Guinea, PIC, p. 602, Ann. Mus. Genova xl : n. spp.
- Notoxus*, table of palæarctic, PIC (1035); *N. miles* var. n. *rubrithorax*, PIC, p. 161, BODEMEYER (131); *N. sectator* var. *obscuripennis*, PIC, p. 428, Ann. Soc. ent. Belgique xlv; *N. numidicus* var. *mauritiï*, *N. mauritanicus* var. *lethierryi*, PIC, p. 32, Echange xvi.
- Pedilus tibialis* var. n. *pallidipes*, PIC, p. 10, Mt. Mus. Hamburg xvii, Beih. ii.
- P. zubovskii*, Buchara, SEMENOW, p. 319, Horæ Soc. ent. Ross. xxxiv; *P. willbergi, polyxanthus*, Buchara, SEMENOW, p. 687, t. c. : n. spp.
- Pristocyphus maculipennis*, E. Africa, PIC, p. 34, Echange xvi, n. sp.
- Scraptia ærtzeni*, Crete, SCHILSKY, Käf. Eur. xxxvii, 28, n. sp.
- Tomoderus tschoffeni*, Congo, PIC, p. 428, Ann. Soc. ent. Belgique xlv; *T. rubrofasciatus*, E. Africa, PIC, p. 35, Echange xvi; *T. (Curtotomoderus* subg. n.), *brevipennis*, Sumatra, PIC, p. 89, t. c.; *T. (Sirambeus) depressipennis*, p. 801, *T. pallidus, modiglianii*, p. 802, *subcostulatus, gestroi*, p. 803, Sumatra, PIC, Ann. Mus. Genova xl; *T. plicicollis*, New Guinea, PIC, p. 603, t. c. : n. spp.

## RHIPIPHORIDÆ and MORDELLIDÆ.

- Evaniocera persimilis*, Victoria, BLACKBURN, p. 60, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Mordellistena oranensis*, Algeria, PIC, p. 124, Bull. Soc. ent. France 1900, n. sp.

## CANTHARIDÆ and CEPHALOIDÆ.

[Cf. GANGLBAUER (131), REITTER (1099), SEMENOW (1199), THOMAS (983), XAMBEU (1420).]

*Cephaloidæ* a valid family near *Ædemeridæ*, SEMENOW, p. 496, Horæ Soc. ent. Ross. xxxiv.

- Ctenopus sogdianus*, Turkestan, p. 486, *eous*, Chinese Turkestan, p. 487, SEMENOW, t. c. n. spp.
- Ephamillus* subg. n. for *Cephaloon variabile* Motsch., SEMENOW, p. 495, t. c.
- Glasunovia*, p. 488, and *G. caspica*, p. 489, characters, SEMENOW, t. c. n. spp.
- Hapalus kraatzianus* n. n. for *apicalis* Kr., p. 490; *H. grandiceps*, p. 492, *fasciatus* Fald., p. 493, characters, SEMENOW, t. c.
- Hapalus sokolowi*, Samarcand, SEMENOW, p. 491, t. c. n. sp.
- Leonidia* n. n. for *Leonia* preoccupied, COCKERELL, p. 11, Psyche ix.
- Lydus reitterianus* = (*Halosimus armeniacus* Reitt. nec. Fald.), SEMENOW, p. 481, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Meloë proscarabæus*, ♂ ♀ antennæ, structure and use, SCHOLZ, p. 217, Illustr. Zeitschr. Ent. v.
- M. bodemeyeri*, Asia Minor, GANGLBAUER, p. 160, BODEMEYER (131); *M. nigropilosellus*, Buchara, REITTER, p. 56, Deutsche ent. Zeitschr. 1900 : n. spp.
- Mylabris somalica*, Somaliland, THOMAS, p. 31, P. Zool. Soc. London 1900, n. sp.

## CEDEMERIDÆ.

[Cf. ARROW (36), GANGLBAUER (131), SEMENOW (1198).]

- Enas coccinea* var. n. *fuscicrus*, BRANCSIK, p. 102, Jahresh. Ver. Trencsen. xxi.
- Zonitis turkestanica*, Samarcand, p. 480, *kozłowi*, Chinese Turkestan, p. 482, SEMENOW, Horæ Soc. ent. Ross. xxxiv, n. spp.
- SEMENOW discusses various genera in connection with the recent work of Seidlitz, t. c. pp. 643-655.
- Omissions from Seidlitz' work, PIC, p. 112, Echange xvi.
- Anisochroa* n.g., p. 652, near *Nacerdochroa*, for *A. zarudnyi* n. sp., Persia, p. 653, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
- Asclera bodemeyeri*, Asia Minor, GANGLBAUER, p. 161, Bodemeyer (131), n. sp.
- Asclerella* n. g., p. 648, near *Zubkovia*, for *A. tenera* n. sp., Persia, p. 651, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
- Chrysanthia superba*, *reitteri*, *oranensis*, synonymy, REITTER, p. 13, Wien. ent. Zeit. xix; *C. superba*, synonymy, PIC, p. 91, Feuille Natural. xxx.
- Eobia* and *Copidita* distinguished, SEMENOW, Horæ Soc. ent. Ross. xxxiv, p. 644.
- Sessinia andrewsi*, p. 107, *listeri*, p. 108, Christmas Is., ARROW, Monogr. Christmas Island, n. spp.
- Sparedrides*; validity of the tribe, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
- Xanthomima* n. g. for *Ananconia handlirschi* Seidl., SEMENOW, p. 646, t. c.

## CURCULIONIDÆ.

[Cf. ALLUAUD (22), BEDEL (88), BLACKBURN (123, 125), BORDAS (144), BRANCSIK (167), DESBROCHERS (314-316), FABRE (385), FAIRMAIRE (389), FAUST (574), GAHAN (478, 479), GERMAIN (491), HARTMANN (564, 565, 566), HELLER (573), KINCAID (711), KOLBE (752), KRAUSS (781), LEA (802, 803), NEEDHAM (936), PERKINS (990), PIC (1008, 1011, 1026, 1028, 1031, 1036), REITTER (1092, 1099, 1100, 1101), SCHULTZE (1167), STIERLIN (1284), XAMBEU (1420).]

Revision of Australian *Cryptorhynchides*, pt. iv, genera allied to *Psepholax*, LEA (802).

Stridulating organs, GAHAN (478).

Instinct and oviposition of numerous forms, *Larinides*, *Balaninides*, *Rhynchitides*, FABRE (385).

Metamorphosis of *Mononychus*, NEEDHAM (936).

*Acalles syriacus*, Lebanon, PIC, p. 79, Echange xvi; *A. humeralis*, Maui, *callichroma*, pl. vii, fig. 10, *melanolepis*, fig. 11, Hawaii, p. 132, *frater*, Maui, *koæ*, Hawaii, p. 133, *innotabilis leptothorax*, fig. 12, Kauai, p. 134, *lanaiensis nigripennis*, fig. 15, Lanai, *chlorolepis*, Kauai, p. 136, *tuberculatus*, Hawaii, *pallidicollis*, Kauai, p. 137, *monticola oahuensis*, Oahu, p. 138, PERKINS, Fauna Hawaiiensis ii : n. spp.

*Acicnemis andrewsi*, Christmas Is., GAHAN, p. 112, Monogr. Christmas Island; *A. figurata*, Bongu, HARTMANN, p. 281, Deutsche ent. Zeitschr. 1900 : n. spp.

*Acnemiscelis araneipes*, note on, MEIER, p. 219, Ent. Nachr. xxvi.

*Alaocyba theresæ*, Tunis, PIC, p. 90, Echange xvi, n. sp.

*Alcides lobipennis*, China, FAIRMAIRE, p. 634, Ann. Soc. ent. France 1900; *A. ferrugineus*, p. 274, *bonguensis*, *frater*, p. 276, Bongu, HARTMANN, Deutsche ent. Zeitschr. 1900; *A. terræreginæ*, Queensland, BLACKBURN, p. 141, Tr. R. Soc. S. Austral. xxiv : n. spp.

*Anchithyrus ornatus*, p. 40, *nebulosus*, *laticollis*, pl. fig. 19, p. 41, Celebes, HELLER, Abh. Mus. Dresden ix, No. 5, n. spp.

*Anotheorus robustus*, Kauai, pl. viii, fig. 27, PERKINS, p. 173, Fauna Hawaiiensis ii, n. sp.

*Atactoglymma* n. g. *Celeuthidarum*, for *A. spinipes* n. sp. Celebes, HELLER, p. 22, Abh. Mus. Dresden ix, No. 5.

*Balaninus tenuesparsus*, China, FAIRMAIRE, p. 635, Ann. Soc. ent. France lxviii, n. sp.

*Baridius* (*Baris*) *subanalis*, *B. libanicola*, Syria, PIC, p. 90, Echange xvi; *B. heydeni*, Caifa, *deflexus*, Greece, p. 41, *sareptanus*, Sarepta, p. 42, *ocellatus*, Piedmont, *propinquus*, Algeria, p. 43, DESBROCHERS, Frelon viii : n. spp.

*Baris holdereri*, Centr. Asia, REITTER, p. 163, Wien. ent. Zeit. xix; *B. orchivora*, Queensland, BLACKBURN, p. 61, Tr. R. Soc. S. Austral. xxiv : n. spp.

*Barypithes carpathicus* and *styriacus* distinguished, REITTER, p. 243, Wien. ent. Zeit. xix.

*Barystethus wahnesi*, New Guinea, HARTMANN, p. 294, Deutsche ent. Zeitschr. 1900, n. sp.

*Bonthaina* n. g. *Celeuthidarum*, p. 20, for *B. fausti*, *solitaria* n. spp., Celebes, p. 21, HELLER, Abh. Mus. Dresden ix, No. 5.

*Brachyaspistes tibialis*, pl. iv, figg. 5, 6, habits, p. 52, Ind. Mus. Notes v.

*Brachyderes lusitanicus*, early stages, XAMBEU, p. 8, Naturaliste xxii.

*Campitorhinus crinipes*, Christmas Is., GAHAN, p. 112, Monogr. Christmas Island, n. sp.

*Catastygus limbifer*, Australia, FAUST, p. 626, Semon Forschungsreise v, n. sp.

*Cathormiocerus churchvillei*, France, DESBROCHERS, p. 44, Frelon viii; *C. alveolatus*, Tangier, DESBROCHERS, p. 15, t. c. : n. spp.

*Ceuthorrhynchus obsoletus* Germ. = (*dalmatinus* Stierl.), SCHULTZE, p. 48, Deutsche ent. Zeitschr. 1900.

*C. ruebsaameni*, Germany, KOLBE, p. 227, Ent. Nachr. xxvi; *C. poncyi*, Roumania, STIERLIN, p. 235, Mt. Schweiz. ent. Ges. x; *C. (Nedys) ? dentatoserratus*, Alexander Mts., REITTER, p. 58, Deutsche ent. Zeitschr. 1900; *C. anatolicus*, p. 21, *brevirostris*, p. 22, Smyrna, *granulithorax*, Spain, Algeria, p. 23, *sericellus*, Syria, p. 25, *planidorsum*, p. 27, *curticornis*, p. 28, Algeria, *longipennis*, Tangasi, p. 30, *pinicellus*, Algeria, p. 31, *carinifrone*, p. 33, *forticornis*, p. 34, Syria, *striatellus*, Hungary, p. 36, *arduus*, Tangier, p. 37, *infernalis*, Syria,



- p. 38, *schusteri*, Vienna, p. 39, *damascenus*, Syria, p. 40, *melitensis*, Malta, p. 42, *longitarsis*, p. 43, *tataricus*, p. 44, Turkestan, *circassicus*, Circassia, p. 46, *tangerianus*, Tangier, p. 47, SCHULTZE, t. c. : n. spp.
- Conocetus cylindrithorax*, Rhodes, DESBROCHERS, p. 14, Frelon viii, n. sp.
- Coptorhynchus* ; Celebes spp. tabulated and discussed, HELLER, pp. 23-27, Abh. Mus. Dresden ix, No. 5.
- C. narinosis*, p. 27, *brevicollis*, *globinasus*, p. 28, *lacerta*, *celeutheticus*, p. 29, *subacutus*, *amplus*, p. 30, *manadensis*, *sulcirostris*, p. 31, *roseipes*, *cyclophthalmus*, p. 32, *beryllinus*, *zygopsicus*, *sternalis*, p. 33, *longicollis*, *luhuanus*, p. 34, *lacophilus*, *amabilis*, p. 35, *heteroclavatus*, p. 36, Celebes, id. t. c. n. spp.
- Corigetis*, characters of Centr.-Asian, REITTER, pp. 62-68, Deutsche ent. Zeitschr. 1900.
- C. rufitarsis*, p. 63, *sieversi*, *excisangulus*, p. 65, Centr. Asia, REITTER, t. c. n. spp.
- Cossonus variipennis*, Christmas Is., GAHAN, p. 114, Monogr. Christmas Island, n. sp.
- Cryptoderma maximum* ♂, HELLER, p. 44, Abh. Mus. Dresden ix, No. 5.
- Cyamobolus obscurus*, p. 285, *scutellaris*, p. 286, Bongu, HARTMANN, Deutsche ent. Zeitschr. 1900, n. spp.
- Cylindrocapturus* H. (= *Copturodes* Casey), HELLER, p. 64, Ent. Nachr. xxvi.
- Cyrtotrachelus areolatus*, China, FAIRMAIRE, p. 636, Ann. Soc. ent. France lxviii, n. sp.
- Degis politus*, New Guinea, HARTMANN, p. 287, Deutsche ent. Zeitschr. 1900, n. sp.
- Deinocossonus* n. g., p. 147, *Cossonides*, isolated, for *D. nesiotes* n. sp., Hawaiian Ids., pl. viii, fig. 3, p. 148, PERKINS, Fauna Hawaiensis ii.
- Denimea strumosa*, Celebes, HELLER, p. 36, Abh. Mus. Dresden ix, No. 5, n. sp.
- Derbyia* n. g. near *Tranes*, p. 543, for *D. laminatus* n. sp., N.W. Australia, p. 544, LEA, P. Linn. Soc. N. S. Wales xxiv.
- Desiantha caudata*, pl. fig. 4, p. 645, FROGGATT, Agric. Gaz. N. S. Wales.
- Dryophthorus assimilis*, Christmas Is., GAHAN, p. 116, Monogr. Christmas Island ; *D. distinguendus*, Hawaiian Ids., *peles*, Hawaii, p. 140, *nesiotes*, pl. vii, fig. 16, p. 141, *homocorhynchus*, fig. 17, p. 142, Kauai, *oahuensis*, Oahu, *kauaiensis*, p. 143, *insignoides*, *brevipennis*, p. 144, *fuscescens*, *verticalis*, fig. 20, p. 145, Kauai, PERKINS, Fauna Hawaiensis ii : n. spp.
- Dysomma* n. g., p. 151, *Cossonides*, for *D. sylvicola* n. sp., Kauai, pl. viii, fig. 6, p. 152, PERKINS, t. c.
- Dyspeithes pascoei*, Bongu, HARTMANN, p. 287, Deutsche ent. Zeitschr. 1900, n. sp.
- Echinocnemis subaureus*, Transcaspian, REITTER, p. 58, t. c. n. sp.
- Ectemnomerus durianus*, Celebes, HELLER, p. 15, Abh. Mus. Dresden ix, No. 5, n. sp.
- Elytrodon luigionii*, Italy, DESBROCHERS, Frelon viii, p. 1, n. sp.
- Episomus fausti*, p. 175, *lucidus*, p. 176, Sumatra, HARTMANN, Wien. ent. Zeit. xix, n. spp.
- Ethemaia sellata*, pl. fig. 3, larva, p. 643, FROGGATT, Agric. Gaz. N. S. Wales xi.
- Exochus gigas*, characters, BOURGEOIS, p. 247, Bull. Soc. ent. France 1900.
- Gymnetron tibellum*, Sardinia, DESBROCHERS, p. 16, Frelon viii ; *G. laterufum*, p. 79, *logesi*, p. 80, Tunis, Pic, Echange xvi : n. spp.
- Halorhynchus geniculatus*, W. Australia, LEA, p. 391, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Halozenus* n. g. *Cossonides* near *Eutornus*, p. 148, for *H. immigrans* n. sp., Hawaiian Ids., pl. viii, fig. 4, p. 149, PERKINS, Fauna Hawaiensis ii.



- Heteramphus filicum*, Oahu, pl. viii, fig. 7, p. 152, *haleakalæ, frater*, Maui, *molokaiensis*, Molokai, p. 153, *kauaiensis*, Kauai, pl. viii, fig. 11, *nivicola*, Maui, p. 154, PERKINS, t. c. n. spp.
- Heteroglymma klabatica*, p. 16, with var. *soputana*, p. 17, *albicans*, p. 17, pl., fig. 24, *cimex*, fig. 13, *sudaræ*, p. 18, Celebes, *bispinosa*, Sangi, p. 19, *echinata*, Lombok, *alata*, Philippines, p. 20, HELLER, Abh. Mus. Dresden ix, No. 5, n. spp.
- Hybomorphus melanosomus*, note on, LEA, p. 529, P. Linn. Soc. N. S. Wales xxiv.
- Hylobius longulus*, China, FAIRMAIRE, p. 633, Ann. Soc. ent. France lxviii, n. sp.
- Hypera*: the species of *Donus*, KRAUSS, pp. 189–205, Wien. ent. Zeit. xix.
- H. rubi*, E. Europe, KRAUSS, p. 189, t. c.; *H. corrosa*, Portugal, DESBROCHERS, Frelon viii, p. 2 : n. spp.
- Hypurus podagricus*, Algeria, SCHULTZE, p. 18, Deutsche ent. Zeitschr. 1900; *H. optimemaculatus*, Tunis, PIC, p. 70, Echange xvi : n. spp.
- Lepidophorus lineaticollis*, early stages, KINCAID, p. 379, pl. xxvi, figg. 8–12, P. Washington Ac. ii.
- Listroderes*: numerous n. spp. from Chili, GERMAIN (491): see also *Puranius*.
- Lixus guttulatus*, Akbès, p. 10, *impar*, Jericho, p. 11, DESBROCHERS, Frelon viii; *L. sulphureovittis*, Ashabad, BRANCSIK, p. 102, pl. iv, fig. 7, Jahresh. Ver. Trencsen. xxi; *L. bonguensis*, Bongu, HARTMANN, p. 273, Deutsche ent. Zeitschr. 1900 : n. spp.
- Lostianus* n. g. near *Notaris*, p. 9, for *L. sardous* n. sp., Sardinia, p. 10, DESBROCHERS, Frelon viii.
- Magdalis anescens*, habits, metamorphosis, CHITTENDEN, Bull. Dep. Agric. Ent. xxii, pp. 37–44.
- Mecocorynus tuberosus*, China, FAIRMAIRE, p. 634, Ann. Soc. ent. France lxviii, n. sp.
- Menechirus* n. g. *Megarrhininorum*, p. 278, for *M. oculatus* n. sp., Bongu, p. 279, HARTMANN, Deutsche ent. Zeitschr. 1900.
- Melanterius*; amended table of species, LEA, pp. 545, 546, P. Linn. Soc. N. S. Wales xxiv.
- Mesites angustior*, Rhodes, PIC, p. 91, Echange xvi, n. sp.
- Miccotrogus lostiæ*, Sardinia, DESBROCHERS, Frelon viii, p. 1, n. sp.
- Myllocerus*; characters of Centr. Asian, synonymy, REITTER, pp. 60, 61, Deutsche ent. Zeitschr. 1900.
- Nanophyes telephii*, France, BEDEL, p. 304, Bull. Soc. ent. France 1900; *N. ægyptiacus*, Fayoum, *palestinus*, Jericho, PIC, Frelon viii, sep. pag. p. 7 : n. spp.
- Nea* n. g. *Calandridarum* near *Aplotes*, for *N. princeps* n. sp., Celebes, pl., fig. 18, HELLER, p. 42, Abh. Mus. Dresden ix, No. 5.
- Neliocarus marmoratus*, Spain, STIERLIN, p. 235, Mt. Schweiz. ent. Ges. x, n. sp.
- Neomerimnetes* n. g., p. 226, for *N. destructor* n. sp., S. Australia, p. 227, BLACKBURN, P. Soc. Victoria xii.
- Neozeuodes* n. g. near *Oreda*, p. 532, for *N. dives*, p. 533, n. sp., New South Wales, LEA, P. Linn. Soc. N. S. Wales xxiv.
- Nesotocus* n. g. *Cossonides* isolated, for *N. munroi*, p. 150, *newelli*, *kauaiensis*, pl. viii, fig. 5, p. 151, n. spp., Hawaiian Ids., PERKINS, Fauna Hawaiianensis ii.
- Ocladius abyssinicus*, Abyssinia, PIC, p. 108, Bull. Soc. ent. France 1900; *O. alluaudi*, Madagascar, FAIRMAIRE, p. 21, t. c. : n. spp.
- Oodemus longirostre*, Kauai, pl. viii, fig. 13, p. 155, *dilatatifipes*, Oahu, p. 156, *costatum*, *longicorne*, Kauai, *punctulatissimum*, Oahu, p. 157, *molokaiense*, Molokai, fig. 14, *chrysodorum*, Maui, fig. 15, p. 158, *brunneum*, Molokai, *cupreum*, p. 159, *haleakalæ*, Maui, *montanum*, p. 160, *apio-*

- noides*, p. 161, *affine*, Kauai, *parallelum*, Oahu, p. 162, *graciliforme*, Kauai, fig. 16, *ramulorum*, Oahu, p. 163, *leiothorax*, fig. 17, *flexirostre*, *dubiosum*, p. 164, *striatum*, fig. 26, *puncticolle*, p. 165, *purpurascens*, *pulchrum*, fig. 18, p. 166, *oblongum*, fig. 19, *grande*, fig. 20, p. 167, Kauai, *corticis*, Lanai etc., fig. 21, *pachysoma*, fig. 22, p. 168, *aeolosoma*, p. 169, Kauai, *nitidissimum*, Oahu, p. 170, *konanum*, *multiforme*, p. 171, Hawaii, PERKINS, Fauna Hawaiiensis ii : n. spp.
- Oreda dubia*, N. S. Wales, LEA, p. 540, P. Linn. Soc. N. S. Wales xxiv, n. sp.
- Orothreptes* n. g. *Cossonides* near *Sericotroqus*, for *O. callithrix* n. sp., Hawaii, pl. viii, fig. 2, PERKINS, p. 147, Fauna Hawaiiensis ii.
- Orthorrhinus cylindrirostris*, habits, injuries, FROGGATT, pp. 847-851, Agric. Gaz. N. S. W. xi.
- Otidognathus forsteri*, p. 290, *purpuratus*, p. 291, *rufescens*, p. 292, *papuanus*, *velutinus*, p. 293, New Guinea, HARTMANN, Deutsche ent. Zeitschr. 1900, n. spp.
- Otiorrhynchus tenuicornis* var. n. *rhodopus*, KRAUSS, p. 241, Wien. ent. Zeit. xix.
- O. (Arammichnus) vaulogeri*, N. Africa, PIC, p. 316, Bull. Soc. ent. France 1900; *O. (Arammichnus) marquardtianus*, *vexator*, Caucasus, REITTER, p. 57, Deutsche ent. Zeitschr. 1900 : n. spp.
- Oxyonyx pici*, Jaffa, SCHULTZE, p. 17, t. c. n. sp.
- Oxyopisthen kolbei*, Congo, HARTMANN, p. 123, Wien. ent. Zeit. xix.
- Pachyonyx lineatus*, Bongu, HARTMANN, p. 283, Deutsche ent. Zeitschr. 1900, n. sp.
- Pachyops? incertus*, Christmas Is., GAHAN, p. 115, Monogr. Christmas Island, n. sp.
- Pachytychius tychioides*, Jerusalem, DESBROCHERS, p. 12, Frelon viii, n. sp.
- Pantomorus olindæ*, Hawaiian Ids., PERKINS, p. 130, Fauna Hawaiiensis ii, n. sp.
- Parimera vitticollis*, Celebes, HELLER, p. 37, pl., fig. 14, Abh. Mus. Dresden ix, No. 5, n. sp.
- Perrhæbius fasciculatus*, Bongu, HARTMANN, p. 282, Deutsche ent. Zeitschr. 1900, n. sp.
- Phlæophagosoma dubium*, Christmas Is., GAHAN, p. 114, Monogr. Christmas Is., n. sp.
- Pholicodes subquadraticollis*, Rhodes, DESBROCHERS, p. 12, Frelon viii, n. sp.
- Phyllobius crassior*, Malta, DESBROCHERS, t. c. p. 3, n. sp.
- Phytonomus subcordicollis*, Tangier, DESBROCHERS, Frelon l. c. n. sp.
- Piezonotus*, cf. *Rhyncholobus*.
- Plinthus (Meleus) ronchettii*, Lombardy, REITTER, p. 87, Deutsche ent. Zeitschr. 1900, n. sp.
- Prodiocetes similis*, Celebes, HELLER, p. 43, pl., fig. 20, Abh. Mus. Dresden ix, No. 5, n. sp.
- Prosayleus comosus*, pl., fig. 2, FROGGATT, p. 644, Agric. Gaz. N. S. W. xi.
- Psepholacipus* n. g. near *Oreda*, p. 541, for *P. fossilis*, *Minor*, n. spp., Australia, p. 542, LEA, P. Linn. Soc. N. S. Wales xxiv.
- Psepholax leoninus*, p. 525, *humeralis*, p. 527, Australia, LEA, t. c. n. spp.
- Pseudobus hospes*, Oahu, PERKINS, p. 149, Fauna Hawaiiensis ii, n. sp.
- Pseudoporopectus minahassus*, pl., fig. 15, *impicus*, fig. 16, Celebes, HELLER, p. 38, Abh. Mus. Dresden ix, No. 5, n. spp.
- Pseudotheribus* n. g. near *Therebus*, p. 536, for *P. sculptipennis* n. sp., Queensland, p. 537, LEA, P. Linn. Soc. N. S. Wales xxiv.
- Puranus* n. g. near *Listroderes*, p. 745, for *P. australis*, p. 747, *tuberosus*, p. 749, *inæqualis*, p. 751, n. spp., Chili, GERMAIN, An. Univ. Chile xcv.
- Rhabdocnemis fausti*, Christmas Is., GAHAN, p. 113, Monogr. Christmas Island, n. sp.

- Rhinocyllus turkestanicus*, Russian Turkestan, DESBROCHERS, Frelon viii, p. 4, n. sp.
- Rhinoncus bosnicus*, Bosnia, SCHULTZE, p. 20, Deutsche ent. Zeitschr. 1900, n. sp.
- Rhinoscapha perfecta*, p. 624, *litoralis*, p. 625, New Guinea, FAUST, Semon Forschungsreisen v, n. spp.
- Rhynchites impressus*, China, FAIRMAIRE, p. 636, Ann. Soc. ent. France lxviii, n. sp.
- Rhyncogonus nitidus*, Kauai, pl. vii, fig. 1, p. 122, *funereus*, Oahu, *squamiger*, pl. vii, fig. 2, p. 123, *stygius*, fig. 3, *minor*, Kauai, p. 124, *molo-kaiensis*, *dubius*, Molokai, p. 125, *freycinetiae*, fig. 4, *koebelei*, fig. 5, p. 126, *kauaiensis*, Kauai, *sordidus*, p. 127, *lanaiensis*, Lanai, *lahainæ*, Maui, *depressus*, fig. 6, p. 128, *vittatus*, fig. 7, *tuberculatus*, p. 129, *sylvicola*, p. 130, Kauai, PERKINS, Fauna Hawaiiensis ii, n. spp.
- Rhyncholobus* n. g. *Otiiorhynchidae*, p. 108, for *R. rossi*, p. 109, pl. xi, figg. 7, 8, *vittatus*, p. 110, fig. 6, *andrewsi*, p. 111, n. spp., Christmas Is. and *Piezonotus discoidalis* Wat., GAHAN, Monogr. Christmas Island.
- Rhytirhinus pici*, Jericho, DESBROCHERS, p. 14, Frelon viii, n. sp.
- Scoliopisthen* n. g. *Oxyopisthini*, p. 121, for *S. sordidum* n. sp., Congo, p. 122, HARTMANN, Wien. ent. Zeit. xix.
- Sitones horrens*, Akbès, *assimilis*, Tangier, p. 5, *persulcatus*, Sardinia, p. 6, *staudingeri*, Oural, *stricticollis*, Italy, p. 7, *curviscelis*, Italy, p. 8, DESBROCHERS, Frelon viii, n. spp.
- Styphlus porosus*, Broussa, DESBROCHERS, p. 13, t. c. n. sp.
- Tapinelytrum* n. g. *Tylodinerum*, p. 39, for *T. mirabile* n. sp., Celebes, p. 40, pl., fig. 17, HELLER, Abh. Mus. Dresden ix, No. 5.
- Tasmanica* n. g. *Cossonides*, p. 392, for *T. myrmecophila* n. sp., Hobart, p. 393, LEA, P. Linn. Soc. N. S. Wales xxv.
- Thalattodora* n. g. *Cossonides*, for *T. insignis* n. sp., Lanai, pl. viii, fig. 1, PERKINS, p. 146, Fauna Hawaiiensis ii.
- Thaumostochirus* n. n. for *Thaumastopus* Hart. 1899, HARTMANN, p. 296, Deutsche ent. Zeitschr. 1900.
- Therebiosoma* n. g. near *Therebus*, for *T. rhinarioides* n. sp., New South Wales, LEA, p. 538, P. Linn. Soc. N. S. Wales xxiv.
- Thylacites proximus*, Tunis, DESBROCHERS, p. 8, Frelon viii, n. sp.
- Trachyphleus scaber*, metamorphosis, XAMBEU, p. 94, Naturaliste xxii.
- Tragopus longicollis*, Celebes, HELLER, p. 39, Abh. Mus. Dresden ix, No. 5, n. sp.
- Trochorhopalus corpulentus*, Celebes, HELLER, p. 43, t. c. n. sp.
- Tychius argentatus*, galls, STEFANI, p. 66, Boll. Nat. xx.

## SCOLYTIDÆ.

[Cf. BARGMANN (68), BELLEVOYE (91), CECCONI (231), GAHAN (478), HOPKINS (599), KNOTEK (737), PERKINS (990), REITTER (1099), ZEHNTNER (1423).]

Stridulating organs, GAHAN (478).

Habits of various *Scolytidae* in East Europe, KNOTEK (737).

Annual generations of *Hylesinus* and *Tomicus*, BARGMANN, Illustr. Zeitschr. Ent. v, p. 169.

American fossil tertiary *Coleoptera* of the family *Scolytidae*, HOPKINS (599).

*Hylastes trifolii*, ravages, metamorphosis, tunnels, CECCONI (231).

*Hylastes imitator*, Chabarowka, REITTER, p. 59, Deutsche ent. Zeitschr. 1900, n. sp.

*Hypothenemus sylvicola*, Lanai, *insularis*, Kauai, *ruficeps*, Oahu, p. 181, PERKINS, Fauna Hawaiiensis ii, n. spp.

*Scolytus rugulosus*, in *Prunus lauro-cerasus*, CHAPMAN, p. 77, Ent. Rec. xii.



*Tomicus typographus*, *piceæ* etc., habits, BARGMANN (68).

*Xyleborus dispar*, *saxesenii*, habits, oviposition, proportions of sexes, BELLEVOYE (91); *X. perforans*, natural history, ZEHTNER (1423); *X. solidus* in Australia, FROGGATT, pp. 640-642, Agric. Gaz. N. S. W. xi. *X. molokaiensis*, Molokai, *kauaiensis*, Kauai, p. 174, *mauiensis*, Maui, *hawaiiensis*, Hawaii, p. 175, *lanaiensis*, Lanai, *simillimus*, Hawaii, p. 176, *oahuensis*, Oahu, *dubiosus*, Maui, p. 177, *agamus*, Lanai, p. 178, *exsectus*, Maui, *vulcanus*, Hawaii, *littoralis*, Molokai, p. 179, *ignobilis*, Hawaii, p. 180, PERKINS, Fauna Hawaiiensis ii, n. spp.

## BRENTHIDÆ.

[Cf. GAHAN (479), SHARP (1208).]

*Cacoschizus* n. g. *Ceocephalides*, for *Schizotrachelus schmeltzii* Fairm., SHARP, p. 386, pl. xxxv, fig. 7, WILLEY Results iv.  
*Cacotrachelus* n. g. *Eutrachelides*, p. 386, for *C. sculptipennis*, New Britain, pl. xxxv, figg. 8, 8a, *javanus*, Java, p. 387, n. spp., SHARP, t. c.  
*Ithystenus debilis*, New Britain, SHARP, p. 387, pl. xxxv, fig. 9, t. c. n. sp.  
*Orychodes andrewsi*, Christmas Is., GAHAN, p. 117, Monogr. Christmas Island, n. sp.

## ANTHRIBIDÆ.

[Cf. ALLUAUD (23), BLACKBURN (124), GAHAN (479), PERKINS (990), PIC (1032).]

Revision of Australian, with tabulation of genera, BLACKBURN, pp. 141-167, Tr. R. Soc. S. Austral. xxiv.

*Apatenia apicalis*, Christmas Is., GAHAN, p. 119, Monogr. Christmas Island, n. sp.

*Aræocerodes* n. g. for *A. lilliputanus* n. sp., Queensland, BLACKBURN, p. 167, Tr. R. Soc. S. Austral. xxiv, n. sp.

*Aræocerus sambucinus* Boisd. redescribed, BLACKBURN, p. 165, t. c.

*A. bicristatus*, p. 163, *kæbeleii*, p. 164, *lindensis*, p. 165, *asperulus*, p. 166, Australia, BLACKBURN, t. c.; *A. constans*, Hawaii, PERKINS, p. 182, Fauna Hawaiiensis ii : n. spp.

*Basitropis relictæ*, p. 154, *pallida*, p. 156, Northern Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.

*Cacephatus* n. g. near *Apatenia*, for *C. sericeus* n. sp., Australia, BLACKBURN, p. 151, t. c.

*Doticus aequalipennis*, Queensland, BLACKBURN, p. 162, t. c. n. sp.

*Enspodus* n. g., *Tropiderides*, p. 148, for *E. bigibbosus* n. sp., S. Australia, p. 149, BLACKBURN, t. c.

*Epargemus* n. g., p. 146, *Tropiderides* or *Phlæophilides*, for *E. marmoratus* n. sp., Victoria, p. 147, BLACKBURN, t. c.

*Eucorynus mastersi*, Queensland, BLACKBURN, p. 144, t. c. n. sp.

*Eutromus* n. g., ? near *Tropideres*, p. 145, for *E. dorsoplagiatus* n. sp., Victoria, BLACKBURN, p. 146, t. c.

*Litocerus jordanii*, Christmas Is., GAHAN, p. 118, Monogr. Christmas Island, n. sp.

*Metadoticus* not distinct from *Doticus*, BLACKBURN, p. 161, Tr. R. Soc. S. Austral. xxiv.

*Misthosima dorsonotata*, Queensland, BLACKBURN, p. 161, t. c. n. sp.

*Notæcia* n. g. *Anthrribides* vrais, p. 159, for *N. reticulata* n. sp., Australia, p. 160, BLACKBURN, t. c.

*Streneoderma* n. g. *Anthrribides* vrais, for *S. planatum*, p. 157, *contemptum*, p. 158, n. spp., Australia, BLACKBURN, t. c.



- Tophoderes murinus*, Madagascar, ALLUAUD, p. 366, Bull. Mus. Paris 1899, n. sp.  
*Tropideres? evanescens*, S. Australia, BLACKBURN, p. 150, Tr. R. Soc. S. Austral. xxiv, n. sp.  
*Urodon vestitus* var. n. *rufobrunneus*, PIC, p. 10, Mt. Mus. Hamburg xvii, Beih. ii.  
*U. kraepelini*, S. Africa, PIC, p. 9, t. c. n. sp.  
*Xenocerus nativitatis*, Christmas Is., GAHAN, p. 118, Monogr. Christmas Island, n. sp.  
*Xynotropis* n. g. *Tropiderides*, for *X. micans* n. sp., Tasmania, BLACKBURN, p. 152, Tr. R. Soc. S. Austral. xxiv.

## PROTERHINIDÆ.

*Proterhinus*; PERKINS describes 122 species of this genus, and figures many of them, from the Hawaiian Islands: most of the species are new, but as the family does not occur outside the islands it seems unnecessary to mention the n. spp. individually: Fauna Hawaiensis ii, pp. 183–246, pls. ix, x.

## CERAMBYCIDÆ.

[Cf. ALLUAUD (22, 23), AURIVILLIUS (44), BEDEL (89), BLACKBURN (125), BOAS (130), BRANCSIK (167), CECCONI (232), CHOBOUT (245), ESCALERA (381), FAIRMAIRE (389, 394, 395), GAHAN (478–482, 983), GANGLBAUER (485), HELLER (573), JAKOWLEFF (654, 655, 657), KINCAID (711), KOLBE (750), LAMEERE (795), MOKRZECKI (916), PIC (999, 1013, 1015, 1021, 1029, 1034), REITTER (1093), SEMENOW (1194, 1200), SEURAT (1202, 1203), SHARP (1208, 1209), WATERHOUSE (1384), XAMBEU (1420).]

XAMBEU continues his descriptions of larvæ of European Longicornia, pp. 109–156 sep. pag. in connection with Echange xvi.

The *Cerambycidæ* of the Hawaiian Islands, SHARP (1209).

Habits and larvæ of Longicorns attacking oaks in Tunis, SEURAT (1202).

Male genitalia, SEURAT (1203).

In reference to PIC's work (999) we must point out that it is so badly edited that it is very difficult to deal with it. REITTER says that it has not been properly published.

*Acanthocinus (Astynomus) henschi*, Bosnia, REITTER, p. 177, Wien. ent. Zeit. xix, n. sp.

*Acmeops*; cf. *Pseudodinoptera*.

*Adetus subcostatus, nigricornis*, p. 412, *fuscopunctatus*, p. 413, Venezuela, AURIVILLIUS, Ofv. Ak. Forh. lvii, n. spp.

*Ægocidnus exiguus*, Christmas Is., GAHAN, p. 124, pl. xi, fig. 4, Monogr. Christmas Island, n. sp.

*Ægosoma mandibulare*, China, FAIRMAIRE, p. 637, Ann. Soc. ent. France lxxviii; *Æ. hainanensis*, Hainan, GAHAN, p. 347, Ann. Nat. Hist. ii : n. spp.

*Agapanthia* (*Agapanthiola* subg. n.), *A. euterpe* n. sp., Irkutsk, GANGLBAUER, p. 139, Verh. Ges. Wien 1; *A. transcaspica*, Askhabad, PIC (999), p. 14, n. sp. ?; *A. melanolopha*, China, FAIRMAIRE, p. 643, Ann. Soc. ent. France lxxviii : n. spp.

*Agapanthiola* subg. n., cf. *Agapanthia*.

*Aleidion griseum*, Venezuela, AURIVILLIUS, p. 417, Ofv. Ak. Forh. lvii, n. sp.

*Alphitopola peeli*, Somaliland, GAHAN, p. 32, P. Zool. Soc. London 1900, n. sp.

- Amphionycha phæbina*, p. 418, *meinerti*, *niveiceps*, *grisea*, p. 419, *stephanus*, p. 420, Venezuela, AURIVILLIUS, Ofv. Ak. Forh. lvii, n. spp.
- Anoplostethus pauli* and *jardinei* referred to *Calothryza*, GAHAN, p. 33, P. Zool. Soc. London 1900.
- Aparescus* n. g. *Apomecynini*, for *A. præcox* n. sp., E. Africa, KOLBE, Berlin. ent. Zeitschr. xlv.
- Aphrodisium latouchei*, note on, FAIRMAIRE, p. 642, Ann. Soc. ent. France lxviii.
- Apomecyna nigratarsis*, Christmas Is., GAHAN, p. 123, Monogr. Christmas Island, n. sp.
- Archidice carolina*, China, FAIRMAIRE, p. 641, Ann. Soc. ent. France lxviii, n. sp.
- Arrhenotus willeyi*, New Britain, SHARP, p. 383, pl. xxxv, fig. 5, Willey Results iv, n. sp.
- Aspurgus* n. g. near *Nicarete*, for *A. cinerarius* n. sp., Madagascar, FAIRMAIRE, p. 136, Bull. Soc. ent. France 1900.
- Astathes cyanoptera*, Hainan, GAHAN, p. 353, Ann. Nat. Hist. v, n. sp.
- Astrimus hirtus* Fairm. = (*obscurus* Sharp), SHARP, p. 96, Fauna Hawaiiensis ii.
- Batocera lactiflua*, colour var., SHARP, p. 385, Willey Results iv.
- Brachyhammus* n. g. *Monohammini*, p. 304, for *B. granulatus* n. sp., E. Africa, pl. iv, fig. 4, p. 305, KOLBE, Berlin. ent. Zeitschr. xlv.
- Brachyta variabilis*, varr., PIC, p. 82, Echange xvi.
- Cacia triangulifera*, Celebes, HELLER, p. 44, pl., fig. 11, Abh. Mus. Dresden ix, No. 5, n. sp.
- Cænoptera marmottani*, female, MAYET, p. 226, Bull. Soc. ent. France 1900; note, FAUVEL, p. 382, and PIC, p. 300, t. c.
- Callidium villosulum*, China, FAIRMAIRE, p. 639, Ann. Soc. ent. France lxviii; *C. sinense*, Shang-hai, PIC, p. 17, Bull. Soc. ent. Belgique xlv : n. spp.
- Callipogon (Eoxenus) relictus*, characters (in Russian, with brief Latin note), SEMENOW, pp. 300-302, Horæ Soc. ent. Ross. xxxiv.
- Ceresium quadrimaculatum*, Christmas Is., GAHAN, p. 121, Monogr. Christmas Island, n. sp.
- Chlorida festiva* in Africa, VETH, p. 311, Tijdschr. Ent. xliii.
- Cleroclytus semenovi*, Bucharâ, *strigicollis*, Kuldja, p. 663, *manifestus*, Turkestan, *vestitus*, Ferghana, p. 664, *gracilis*, Zeravschan, p. 665, JAKOWLEFF, Horæ Soc. ent. Ross. xxxiv, n. spp.
- Clytarlus mediocris*, Maui, *debilis*, Hawaii, p. 99, *obscurus*, Kauai, p. 100, *claviger*, Hawaii, *laticollis*, Maui, p. 101, *abnormis*, *nodifer*, Hawaii, p. 102, *longipes*, p. 103, *annectens*, p. 104, Kauai, SHARP, Fauna Hawaiiensis ii, n. spp.
- Clytus lama* var. n. *vesubiensis*, PIC, p. 110, Bull. Soc. ent. France 1900; *C. (Sphegestes)*, table of species, PIC (999), pp. 8-10.
- C. (Clytanthus) theryi*, China, PIC, p. 19, Ann. Soc. ent. Belgique xlv, n. sp.
- Conizonia vittithorax*, Barbary, PIC (999), p. 16, n. sp.?
- Craspedocerus* n. g. *Ptericoptidæ*, p. 413, for *C. pæcilus* n. sp., Venezuela, p. 414, AURIVILLIUS, Ofv. Ak. Forh. lvii.
- Crossotus bifasciatus*, E. Africa, KOLBE, p. 307, Berlin. ent. Zeitschr. xlv, n. sp.
- Cyrtognathus breviceps*, Formosa, FAIRMAIRE, p. 637, Ann. Soc. ent. France lxviii, n. sp.
- Damiria* n. g. near *Listroptera*, for *D. perrieri* n. sp., Madagascar, FAIRMAIRE, p. 89, Bull. Soc. ent. France 1900.
- Dicelosternus* n. g., p. 308, *Stenaspides*, for *D. corallinus* n. sp., Formosa, p. 309, GAHAN, Ann. Nat. Hist. v.
- Dorcadion bolivari* var. n. *rufipes*, ESCALERA, p. 238, Act. Soc. Espan.

- 1900; *D. sericatum* var. n. *atripes*, REITTER, p. 88, Deutsche ent. Zeitschr. 1900; *D. equestre* varr. n. *niveoconjunctum*, *romaniense*, PIC, p. 352, Ent. Nachr. xxvi; *D. globithorax* var. ? *staudingeri*, PIC, p. 29, Echange xvi; *Dorcadion* spp. or varr. described, PIC (999), pp. 12–14; *D. staudingeri*, name changed to *alexandris*, PIC, p. 56, t. c.
- D. rosti*, Caucasus, PIC, p. 82, t. c. ? n. sp.; *D. lesnei*, p. 233, *navasi*, p. 234, *ferdinandi*, p. 235, *laufferi*, p. 236, *marmottani*, p. 237, *stepari*, p. 239, *griseus*, p. 240, Spain, ESCALERA, Act. Soc. Espan. 1900; *D. ciscaucasicum*, Stavropol, p. 59, *apicipenne*, Kuldja, p. 61, *hyrcanum*, N. Persia, p. 64, *bisignatum*, Transcaucasus, p. 66, *D. (Compsodorcadion) phenax*, W. Siberia, p. 68, JAKOWLEFF, Horæ Soc. ent. Ross. xxxiv; *D. (Compsodorcadion) pantherinum*, Kirghiz Steppes, p. 147, *sokolowi*, Semipalatinsk, p. 151, *tschitscherini*, Sémiretchié, p. 153, JAKOWLEFF, op. cit. xxxiii : n. spp.
- Ergates akbesianus*, Syria, PIC, p. 81, Echange xvi, n. sp.
- Eugoa ruficus* Gerst., pl. iv, fig. 3, p. 301, KOLBE, Berlin. ent. Zeitschr. xlv.
- Eustathes flava* var. n. *femoralis*, HELLER, p. 46, Abh. Mus. Dresden lx, No. 5.
- Examenes philippensis* Newm. = (*longicornis* Pasc. = *idoneus* Pasc.), GAHAN, p. 122, Monogr. Christmas Island.
- E. affinis*, Christmas Is., GAHAN, p. 122, t. c. n. sp.
- Glenaea extrema*, New Britain, SHARP, p. 385, Willey Results iv, n. sp.
- Gnatholeophanes* n. g. *Hesperophaninae*, for *G. octosignatus* n. sp., E. Africa, pl. iv, fig. 2, KOLBE, p. 301, Berlin. ent. Zeitschr. xlv.
- Gnomidolon meinerti*, Venezuela, AURIVILLIUS, p. 410, Ofv. Ak. Forh. lvii, n. sp.
- Grammopsis* n. g. for *Hippopsis clavigera* Bates, and *G. minima* n. sp., Venezuela, AURIVILLIUS, p. 416, t. c.
- Hippopsis meinerti*, Venezuela, AURIVILLIUS, p. 416, t. c. n. sp.
- Homœomota latibilis*, Victoria, BLACKBURN, p. 232, P. Soc. Victoria xii, n. sp.
- Idactus granti*, Sokotra, GAHAN, p. 12, Bull. Liverp. Mus. iii; *I. succisus*, E. Africa, KOLBE, p. 306, Berlin. ent. Zeitschr. xlv : n. spp.
- Jamvonius sticheli*, E. Africa, KOLBE, p. 297, pl. iv, fig. 1, t. c. n. sp.
- Lamia textor* and *Morinus asper*, injurious habits, CECONI (232).
- Lasiopezus ambiguus*, E. Africa, KOLBE, p. 306, Berlin. ent. Zeitschr. 1900, n. sp.
- Leontium lumeeri*, China, PIC, p. 18, Ann. Soc. ent. Belgique xlv, n. sp.
- Leprodra bioculata*, China, FAIRMAIRE, p. 641, Ann. Soc. ent. France lxviii, n. sp.
- Leptalia macilentata*, larva, KINCAID, p. 376, pl. xxv, figg. 8–12, P. Washington Ac. ii.
- Leptura (Stenura) vaucheri*, Algeria, BEDEL, p. 336, Bull. Soc. ent. France 1900; *L. suberis*, Algeria, CHABAUT, p. 265, t. c.; *L. dissimilis*, China, FAIRMAIRE, p. 639, Ann. Soc. ent. France lxviii : n. spp.
- Leucographus murinus*, Madagascar, ALLUAUD, p. 367, Bull. Mus. Paris 1899, n. sp.
- Lobarthron* subg. n. of *Prionus* for part of *Psilopus* Jak., SEMENOW, p. 254 and p. 333, Horæ Soc. ent. Ross. xxxiv.
- Macroprionus* subg. n., cf. *Prionus*.
- Mallosia græca* var. n. *cardoriensis*, PIC, p. 109, Bull. Soc. ent. France 1900.
- Mecothyrea peregrina*, *auratipennis*, E. Africa, KOLBE, p. 302, Berlin. ent. Zeitschr. xlv, n. spp.
- Melanauster macropsilus*, p. 349, *similis*, p. 350, Hainan, GAHAN, Ann. Nat. Hist. v, n. sp.
- Micromallosia* n. g. for *M. theresæ* n. sp., Mardin, PIC (999), p. 15.
- Myiodola* n. g. near *Anthrribola*, p. 87, for *M. perrieri*, *muscaria*, n. spp.,

- Madagascar, p. 88, and *Sagridola scalabrii* Fairm., FAIRMAIRE, Bull. Soc. ent. France 1900.
- Neodorcadion przewalskii* redescribed, JAKOWLEFF, pp. 71-73, Horæ Soc. ent. Ross. xxxiv.
- Neopolyarthron* subg. n. of *Prionus*, SEMENOW, p. 255, t. c.
- Niphona hookeri*, E. Asia, GAHAN, p. 351, Ann. Nat. Hist. v, n. sp.
- Nyctonymphea glauca, annulata*, Venezuela, AURIVILLIUS, p. 420, Ofv. Ak. Forh. lvii, n. sp.
- Oberea oculata* var. n. *borysthenica*, larva and habits, MOKRZECKI, Horæ Soc. ent. Ross. xxxiv, pp. 294-299, pl. i; *O. bimaculata*, larval habits, WEBSTER, p. 437, Ent. News Philad. xi.
- Oeme fusca*, Sokotra, GAHAN, p. 12, Bull. Liverp. Mus. iii, n. sp.
- Oncoderes*: note on habits and metamorphosis, OHAUS (1956, p. 173).
- Pachydissus (Derolus) somalicus*, Somaliland, GAHAN, p. 32, P. Zool. Soc. London 1900, n. sp.
- Pelargoderus apicalis*, Hainan, GAHAN, p. 348, Ann. Nat. Hist. v, n. sp.
- Peribæum meinerti*, Venezuela, AURIVILLIUS, p. 409, Ofv. Ak. Forh. lvii, n. sp.
- Philematium sansibaricum* var. n. *transversalis*, KOLBE, p. 303, Berlin. ent. Zeitschr. 1900.
- Philus antennatus*, stridulating organ, GAHAN, p. 347, Ann. Nat. Hist. v.
- Phytæcia*: notes on with ?new subgenera, PIC, p. 16, Bull. Soc. zool. France xxv; *P. (Helladia)*, notes on species, PIC, pp. 139, 140, Bull. Soc. ent. France 1900; *P. croceipes* var. *annulifer*, *P. humeralis* var. *bethaniensis*, PIC, p. 67, Ent. Nachr. xxvi.
- P. akbesiana*, Syria, PIC, p. 20, Echange xvi, ?n. sp.; *P. ingeniculata*, *P. (Helladia) dilaticollis*, Syria, PIC, Ent. Nachr. xxvi, p. 67 : n. spp.
- Plagithmysus permundus*, p. 105, *diana*, pl. vi, fig. 11, Kauai, *collaris*, Maui, fig. 13, p. 107, *lamarckianus*, Hawaii, p. 110, *munroi*, Kauai, fig. 19, p. 112, SHARP, Fauna Hawaiiensis ii, n. spp.
- Planodes stratus*, Celebes, HELLER, p. 45, pl., fig. 7, Abh. Mus. Dresden ix, No. 5, n. sp.
- Plocoderus conradti* var. *strigicollis*, KOLBE, p. 303, Berlin. ent. Zeitschr. xlv.
- Pogonarthron* subg. n., cf. *Polyarthron*.
- Polyarthron*; notes on species, with new subgenera, *Pogonarthron*, *Polylobarthron*, SEMENOW, pp. 251-259, Horæ Soc. ent. Ross. xxxiv; *P.*: the subgenera, PIC, pp. 2, 3, Miscell. ent. viii.
- P. (subg. n. Pogonarthron) bedeli*, Buchara, SEMENOW, p. 249, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Polylobarthron* subg. n. of *Polyarthron* for *P. margelanicum*, SEMENOW, pp. 254, 258, t. c.
- Praonetha perplexa* referred to *Pterolophia* and figured, pl. xi, fig. 5, p. 123, GAHAN, Monogr. Christmas Island.
- P. sinensis*, China, FAIRMAIRE, p. 642, Ann. Soc. ent. France 1900, n. sp.
- Prinobius coralis*, Christmas Is., GAHAN, p. 120, Monogr. Christmas Island, n. sp.
- Prionocalus simonsi*, p. 504, *whitei*, p. 505, Ecuador, *uniformis*, Peru, p. 505, WATERHOUSE, Ann. Nat. Hist. v, n. spp.
- Prionus*; revision of palæarctic, SEMENOW, pp. 325-334, Horæ Soc. ent. Ross. xxxiv; *P. brachypterus alpherakii* subsp. n., id. t. c. p. 324; *P.*, for subgen. n. cf. *Neopolyarthron*, *Lobarthron*, *Macropriionus*.
- P. angheri*, Ashabad, BRANCSIK, p. 102, pl. iv, fig. 8, Jahresh. Ver. Trencsen. xxi; *P. (Macropriionus subg. n.) heros*, Chinese Turkestan, SEMENOW, p. 320, Horæ Soc. ent. Ross. xxxiv : n. spp.
- Prymnopteryx meinerti*, Venezuela, AURIVILLIUS, p. 414, Ofv. Ak. Forh. lvii, n. sp.
- Pseudodinoptera* n. subg. of *Acmæops* for *A. daghestanica* Pic, PIC, p. 82, Echange xvi.



- Pseudopidonia* n. g. near *Pidonia*, for *P. amurensis* n. sp., Siberia, PIC, p. 81, t. c.  
*Psilopus*; cf. *Lobarthron*.  
*Pyresthes rugicollis*, China, FAIRMAIRE, p. 642, Ann. Soc. ent. France lxxviii, n. sp.  
*Rhagium sinense*, China, FAIRMAIRE, p. 638, t. c. n. sp.  
*Rosalia alpina*, variation, REITTER, pp. 130–132, Wien. ent. Zeit. xix; PIC, p. 11, Ent. Nachr. xxvi and p. 59, Echange xvi; CSIKI, pp. 100–102, Rov. Lapok vii.  
*Saperda populnea*; instinct, larval food-habits, BOAS (130).  
*S. maculithorax*, Japan, PIC, p. 19, Ann. Soc. ent. Belgique xlv, n. sp.  
*Sphingnotus yorkensis* Fairm. referred to *Tmesisternus*, SHARP, p. 384, Willey Results iv.  
*Stenoderus concolor* Mad., BLACKBURN, p. 230, P. Soc. Victoria xii.  
*Sybilla dancoi*, Patagonia, LAMEERE, p. 112, Ann. Soc. ent. Belgique xlv, n. sp.  
*Sybrinus* n. g. near *Sybra*, p. 12, for *S. commixtus* n. sp., Sokotra, p. 13, GAHAN, Bull. Liverp. Mus. iii.  
*Syllitus heros*, p. 231, *microps*, p. 232, Australia, BLACKBURN, P. Soc. Victoria xii, n. spp.  
*Tetropriopsis*, classification, CHOBOUT, p. 263, Bull. Soc. ent. France 1900; note, PIC, p. 30, t. c.  
*Thoris septemguttata*, p. 228, *mærens*, p. 229, Australia, BLACKBURN, P. Soc. Victoria xii, n. spp.  
*Trachytola maculipennis*, p. 639, *nodicollis*, Tonkin, *rugiscapus*, China, p. 640, FAIRMAIRE, Ann. Soc. ent. France lxxviii, n. spp.  
*Tragiscoschema nigroscriptum* Fairm., pl. iv, fig. 5, p. 307, KOLBE, Berlin. ent. Zeitschr. xlv.  
*Vadonia unipunctata* varr., PIC, Frelon viii, sep. pag. pp. 3, 4.  
*Xiphotheata luctifera*, ♂ characters, SHARP, p. 385, pl. xxxv, fig. 6, Willey Results iv.  
*Xystrocera janthinicornis*, p. 299, *æquabilis*, p. 300, E. Africa, KOLBE, Berlin. ent. Zeitschr. 1900, n. spp.

## BRUCHIDÆ.

[Cf. BLACKBURN (123), PIC (1006), SEURAT (1205), SHARP (1209).]

- Tracheal system of larva, distinctions from *Curculionidæ*, SEURAT (1205).  
*Bruchus lyndhurstensis*, p. 62, *oodnadatta*, *quornensis*, p. 63, *persimulans*, p. 64, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv; *B. scapularis*, Brazil, PIC, p. 29, Bull. Soc. ent. France 1900 : n. spp.

## CHRYSOMELIDÆ.

[Cf. BLACKBURN (123, 124), BELLEVOYE (90), BERG (100), BORDAS (144, 146), BRANCSIK (167), CSIKI (299, 300, 302), FABRE (385), FAIRMAIRE (394), FORMANEK (440), GAHAN (478, 479), GESTRO (496–498), HELLER (573), JACOBSON (640), JACOBY (644–648), KINCAID (711), KOLBE, W. (754), LESNE (816), MEIER (884, 885), PIC (1025–1027), REITTER (1092, 1095, 1099), SANDERSON (1147), SHARP (1209), SPAETH (1258, 1259), WEISE (131, 1394, 1396, 1397, 1398, 1401, 1403).]

Corrections and additions to Douckier's catalogue of *Hispidæ*, GESTRO, pp. 433–440, Ann. Mus. Genova xl.

Catalogue of *Sagrides*, CLAVAREAU, pp. 269–280, Ann. Soc. ent. Belgique xlv and PIC, t. c. pp. 353, 354.

Structure of larvae and respiratory appendages of *Donacia*, SANDERSON (1147).

Male sexual glands, BORDAS (146).

Eggs and case-making of *Clythridæ*, FABRE (385).

Stridulating organs of *Hispideæ*, *Clythridæ*, GAHAN (478).

*Achænops? puncticollis*, S. Africa, JACOBY, p. 219, P. Zool. Soc. London 1900, n. sp.

*Aenidea bengalensis*, India, JACOBY, p. 133, Mem. Soc. ent. Belgique vii, n. sp.

*Agbalus nigroviolaceus*, p. 464, *bolivianus*, p. 465, *chiriquensis*, *subcostatus*, p. 466, *strigicollis*, p. 467, S. America, JACOBY, Tr. ent. Soc. London 1900, n. spp.

*Alethaxius angulicollis*, p. 490, *A. ? sericeus*, p. 491, *A. verrucosus*, p. 492, S. America, JACOBY, t. c. n. spp.

*Alurnus*, synonymical note, GESTRO, p. 468, Ann. Mus. Genova xl.

*Anthipha mandarensis*, India, JACOBY, p. 134, Mem. Soc. ent. Belgique vii, n. sp.

*Aphthona ovatipennis*, p. 245, *bicolor*, *marginata*, p. 246, *minuta*, p. 247, Africa, JACOBY, P. Zool. Soc. London 1900; *A. indica*, p. 120, *hugeli*, p. 121, India, JACOBY, Mem. Soc. ent. Belgique vii : n. spp.

*Aracyntha thoracica*, Brazil, JACOBY, p. 471, Tr. ent. Soc. London 1900, n. sp.

*Argoa mucronata*, Brazil, JACOBY, p. 500, t. c. n. sp.

*Asbecesta ornaticollis*, *ornata*, pl. xx, fig. 11, Africa, JACOBY, p. 255, P. Zool. Soc. London 1900, n. spp.

*Aspidolopha usambarica*, Africa, *manilensis*, Philippines, WEISE, p. 448, Deutsche ent. Zeitschr. 1900, n. spp.

*Aspidomorpha difformis*, characters, WEISE, p. 295, Arch. Naturg. lxvi.

*A. gorhami*, Natal, WEISE, p. 445, Deutsche ent. Zeitschr. 1900, n. sp.

*Blepharida regularis*, Africa, JACOBY, p. 252, P. Zool. Soc. London 1900, n. sp.

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- Phædon pyritosus* var. *cœrulescens*, WEISE, p. 286, Arch. Naturg. lxvi.
- P. (Sternoplatys) baicalicus*, E. Siberia, *deubeli*, Transsylvania, *subtilis*,

- Margelan, WEISE, p. 285, t. c.; *P. assamensis*, Assam, JACOBY, p. 120, Mem. Soc. ent. Belgique vii : n. spp.
- Phyllotreta rubrithorax*, Jericho, PIC, p. 80, Echange xvi; *P. erysimi*, Asia Minor, WEISE, p. 166, Bodemeyer (131); *P. turmenica*, Taschkent, WEISE, p. 138, Deutsche ent. Zeitschr. 1900; *P. capensis*, p. 243, *unicostata*, p. 244, S. Africa, JACOBY, P. Zool. Soc. London 1900 : n. spp.
- Phytodecta quinquepunctata* var. n. *flavipennis*, KRAUSS, p. 241, Wien. ent. Zeit. xix.
- Plagioderes congoensis*, Africa, JACOBY, p. 242, P. Zool. Soc. London 1900, n. sp.
- Plateumaris sulcifrons*, Zeitun, WEISE, p. 267, Arch. Naturg. lxvi, n. sp.
- Platypria sumatrensis*, Sumatra, CSIKI, p. 196, Termes. Fuzetek xxiii, n. sp.
- Platyxantha elegans* (Har. as *Luperus*) = (*costatipennis* Jac. = *Ap. costipennis* Fairm. = *Megalogn. haroldi* Fairm.), WEISE, p. 457, Deutsche ent. Zeitschr. 1900.
- P. bicornis*, Mashonaland, pl. xx, fig. 8, p. 264, JACOBY, P. Zool. Soc. London 1900, n. sp.
- Podagricus desertorum*, Ashabad, BRANCSIK, p. 104, Jahresh. Ver. Trensen. xxi, n. sp.
- Pœcilaspis boggianii*, Paraguay, SPAETH, p. 577, Ann. Mus. Genova xl, n. sp.
- Pœphila costatipennis, fulvipes*, systematic position, JACOBY, p. 265, P. Zool. Soc. London 1900.
- Polychalca cribrata*, Colombia, WEISE, p. 460, Deutsche ent. Zeitschr. 1900, n. spp.
- Promecotheca papuana*, New Guinea, CSIKI, p. 80, Termes. Fuzetek xxiii; *P. biroii*, New Guinea, CSIKI, p. 196, t. c. : n. spp.
- Psecadia* n. n. for *Psecas* Weise, WEISE, p. 458, Deutsche ent. Zeitschr. 1900.
- Pseudocalaspidea cassidea* var. n. *jacobsoni*, CSIKI, p. 403, Termes. Fuzetek xxiii.
- Pseudocolaspis puberula*, referred to *Macetes*, JACOBY, p. 265, P. Zool. Soc. London 1900.
- P. cuprefemorata*, Mashonaland, pl. xx, fig. 4, *severini*, Congo, p. 225, JACOBY, t. c.; *P. himalayensis*, India, JACOBY, p. 111, Mem. Soc. ent. Belgique vii : n. spp.
- Pseudodera cyanipennis*, Bengal, JACOBY, p. 122, t. c. n. sp.
- Pseudomela nigripennis*, Cameroons, JACOBY, p. 421, P. Zool. Soc. London 1900, n. sp.
- Pseudometaxis* n. g. near *Hyperaxis*, p. 101, for *P. serraticollis* n. sp., Burma, p. 102, JACOBY, Mem. Soc. ent. Belgique vii.
- Pseudosyagrus africanus*, Tati, JACOBY, p. 228, Bull. Mus. Paris 1900, n. sp.
- Psylliodes longicollis*, Armenia, *danieli*, Tyrol, p. 292, *schwarzi*, Monte Rosa, p. 293, WEISE, Arch. Naturg. lxvi; *P. longicollis*, Armenia, REITTER, p. 59, Deutsche ent. Zeitschr. 1900 : n. spp.
- P. tenuipunctata*, Christmas Is., GAHAN, p. 127, Monogr. Christmas Island, n. sp.
- Rhabdopterus peruenis*, p. 482, *imitans*, *colombiensis*, p. 483, *apicicornis*, p. 484, *amazonicus*, p. 485, *apicipes*, *abdominalis*, p. 486, *venezuelensis*, p. 487, *fulvicollis*, p. 488, *semifulvus*, p. 489, S. America, JACOBY, Tr. ent. Soc. London 1900, n. spp.
- Rhembastus geminatus*, p. 234, *affinis*, *nigripes*, p. 235, *uniformis*, *interstitialis*, p. 236, *irregularis*, p. 237, Africa, JACOBY, P. Zool. Soc. London 1900, n. spp.
- Rhyarida rossi*, p. 124, *modesta*, p. 125, Christmas Is., GAHAN, Monogr. Christmas Island, n. spp.
- Rupilia angulaticollis*, p. 66, *approximans*, p. 67, Queensland, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.



- Sagra ferox*=(*longefemorata* Fairm., *opaca* Jac., *longipes* Kolbe and *kolbei* Clav.), *S. striatipennis* Jac.=(*sulcipennis* K.), *S. cambieri* Duv.=(*tibialis* Fairm.), WEISE, p. 446, Deutsche ent. Zeitschr. 1900; *S. kolbei* n. n. for *longipes* K. nec Baly, CLAVAREAU, p. 269, Ann. Soc. ent. Belgique xlv.
- Sardoides nigricornis*, Natal, JACOBY, p. 263, P. Zool. Soc. London 1900, n. sp.
- Sastroides tibialis*, India, JACOBY, p. 131, Mem. Soc. ent. Belgique vii, n. sp.
- Scelodonta celebensis* and *leviuscula*, note on, HELLER, p. 46, Abh. Mus. Dresden ix, No. 5.
- S. sexplagiata*, Natal, JACOBY, p. 226, pl. xx, fig. 5, P. Zool. Soc. London 1900, n. sp.
- Semicnema macella*, Kiachta, WEISE, Arch. Naturg. lxvi, p. 291, n. sp.
- Sermyla maculata*, referred to *Sermylodes*, JACOBY, p. 257, P. Zool. Soc. London 1900.
- Sermylodes unifasciata*, Mashonaland, JACOBY, p. 257, t. c. n. sp.
- Serraphula elongata*, S. Africa, JACOBY, p. 247, t. c. n. sp.
- Silurnus* n. g. near *Alurnus*, p. 219, for *S. consanguineus* n. sp., Sao Paulo, p. 218, WEISE, Deutsche ent. Zeitschr. 1900.
- Sphæroderma ornatipennis* n. n. for *flavoplagiata* Jac. 1896, JACOBY, p. 124, Mem. Soc. ent. Belgique vii.
- S. mashonana*, Salisbury, JACOBY, p. 252, P. Zool. Soc. London 1900; *S. mandarensis*, p. 123, *brevicornis*, p. 124, India, JACOBY, Mem. Soc. ent. Belgique vii : n. spp.
- Spheropsis fruhstorferi*, Bahía, JACOBY, p. 499, Tr. ent. Soc. London 1900, n. sp.
- Syagrus opacus*, *antennatus*, S. Africa, JACOBY, p. 231, P. Zool. Soc. London 1900, n. spp.
- Syoplia africanus*, W. Africa, JACOBY, p. 265, t. c.; *S. nigripennis*, India, JACOBY, p. 132, Mem. Soc. ent. Belgique vii : n. spp.
- Taphinella bengalensis*, India, JACOBY, p. 140, Mem. Soc. ent. Belgique vii, n. sp.
- Therpis* n. g. near *Aphophyllia*, p. 455, for *T. smaragdina* n. sp., Mombas, WEISE, p. 456, Deutsche ent. Zeitschr. 1900.
- Timarcha violaceonigra* var. n. *fracassii*, MEIER, p. 78, Ent. Nachr. xxvi.
- T. schencklingi*, Abruzzi, MEIER, p. 161, t. c. n. sp.
- Trichochrysea severini*, Bengal, JACOBY, p. 109, Mem. Soc. ent. Belgique vii, n. sp.
- Tricliona indica*, *levicollis*, India, JACOBY, p. 110, t. c. n. spp.
- Xanthonia nigripennis*, India, JACOBY, p. 100, Mem. Soc. ent. Belgique vii, n. sp.
- Zeugophora anchora*, Centr. Asia, p. 164, pl. i, fig. 9, with var. *pseudancora*, p. 165, REITTER, Wien. ent. Zeit. xix, n. sp.

### EROTYLIDÆ (incl. LANGURIIDÆ).

[Cf. GORHAM (512, 513), HELLER (573), REITTER (1099).]

- Amblyopus hæmorrhous* referred to *Amblyscelis*, habitat queried, GORHAM, p. 90, Ann. Nat. Hist. v.
- Amblyscelis nigrinus*, Natal, *conradti*, W. Africa, p. 88, *brunneus*, Natal, p. 89, GORHAM, t. c. n. spp.
- Anadastus lorianus*, p. 361, *haroldi*, p. 362, *gagaticeps*, p. 364, New Guinea, GORHAM, Ann. Mus. Genova xl, n. spp.
- Callilanguria asymmetrica*, Celebes, HELLER, p. 5, pl. fig. 3, Abh. Mus. Dresden ix, No. 5, n. sp.

- Crotchia fusiformis*, Paraguay, *balzanii*, Bolivia, GORHAM, p. 397, Ann. Mus. Genova xl, n. spp.
- Cyrtengis* n. g. near *Daene*, for *C. testacea* n. sp., Bucharra, REITTER, p. 51, Deutsche ent. Zeitschr. 1900.
- Dasydactylus solarii*, Nicaragua, GORHAM, p. 365, Ann. Mus. Genova xl, n. sp.
- Lacertobelus* n. g. near *Fatua*, for *L. dentipes*, p. 358, *longimanus*, p. 360, n. spp., Sumatra, GORHAM, t. c.
- Langurosoma thoracica*, N. Guinea, GORHAM, p. 360, t. c. n. sp.
- Lophocrotaphus* n. g. p. 91, near *Amblyopus*, for *L. guineensis* n. sp., Africa, p. 92, GORHAM, Ann. Nat. Hist. v.
- Neocoptengis* n. g. for *N. cyanipes* n. sp., Celebes, HELLER, p. 6, pl. fig. 2, Abh. Mus. Dresden ix, No. 5.
- Promecolanguria marshalli*, *trogositoides*, Natal, GORHAM, p. 87, Ann. Nat. Hist. v, n. spp.
- Pycnogeusteria* n. g., p. 90, near *Amblyopus*, for *P. kraatzii* n. sp., W. Africa, GORHAM, p. 91, t. c.
- Tetralanguria elongata*, variation, GORHAM, p. 356, Ann. Mus. Genova xl.
- Tritoma jakolewi*=(*subbasalis* Reitt.), MÜLLER, p. 23, Wien. ent. Zeit. xix.
- Zythonia anthracina*, Congo, GORHAM, p. 92, Ann. Nat. Hist. v, n. sp.

## ENDOMYCHIDÆ.

[Cf. CSIKI (298, 301, 302), GAHAN (478), GORHAM (512).]

- Stridulating organs, GAHAN (478), pp. 435-437.
- Ancylopus nigrofuscus*, Natal, GORHAM, p. 93, Ann. Nat. Hist. v, n. sp.
- Dapsa opuntiae* var. n., *sahlbergi*, REITTER, p. 219, Wien. ent. Zeit. xix.
- Encymon erimæ*, New Guinea, CSIKI, p. 123, Termes. Fuzetek xxiii, n. sp.
- Gibbiger* subg. n. of *Milichius* for *M. fasciatus* Heller, CSIKI, p. 377, t. c.
- Haploscelis nitidus*, *nossibeanus*, p. 400, *madecassus*, p. 401, Madagascar, CSIKI, t. c. n. spp.
- Milichius javanicus*, Java, CSIKI, p. 376, t. c. n. sp.
- Mycetina cruciata* var. n. *balcanica*, CSIKI, p. 401, t. c.
- M. montivaga*, Darjiling, id., l. c. n. sp.
- Stenotarsoides* n. g. for Asiatic and Australian *Stenotarsus*, with *S. quadrimaculatus*, Australia, p. 401, *pulcher*, *flavotestaceus*, New Guinea, p. 402, n. sp., CSIKI, t. c.
- Stenotarsus biroii*, New Guinea, CSIKI, p. 124, t. c. n. sp.
- Trycherus elegans*, Cameroons, CSIKI, p. 400, t. c. n. sp.

## COCCINELLIDÆ.

[Cf. ARROW (36), BLACKBURN (123), BORDAS (144), FLEISCHER (423, 426), JACOBSON (641), PIC (1031), SEMENOW (1196), WEISE (1395, 1396, 1399, 1400).]

The colour-markings, ontogeny, phylogeny, JACOBSON (641).

Food-habits of *Coccinellidæ*; correction of erroneous statements, WEISE, pp. 297-301, Deutsche ent. Zeitschr. 1900.

*Adonia arctica* var. n. *caucasica*, FLEISCHER, p. 116, Wien. ent. Zeit. xix; *A. variegata*, habits, variation, WEISE, p. 122, Deutsche ent. Zeitschr. 1900.

*Alesia annulata* var. *bimaculata*, CANNAVIELLO, p. 303, Bull. Soc. ent. Ital. xxxii.

*Aspidimerini*; characters and components, WEISE, pp. 426, 427, Deutsche ent. Zeitschr. 1900.

- Aspidimerus circumflexus* varr., WEISE, p. 423, t. c.  
*A. horni*, Ceylon, id. p. 424, t. c. n. sp.  
*Autotela* n. g. near *Cælophora*, p. 125, for *A. picticollis*, p. 126, *cincta*, p. 127, *vittula*, *nigra*, p. 128, n. spp., E. Africa, WEISE, t. c.  
*Brumus* 8-*signatus* var. n. *conjunctus*, FLEISCHER, p. 118, Wien. ent. Zeit. xix.  
*B. mongolicus*, Mongolia, FLEISCHER, l. c.; *B. ceylonicus*, Trincomalee, WEISE, p. 421, Deutsche ent. Zeitschr. 1900 : n. spp.  
*Chilocorus tibialis*, larva, WEISE, p. 129, Deutsche ent. Zeitschr. 1900.  
*C. bennigseni*, E. Africa, WEISE, p. 128, t. c. n. sp.  
*Clanini*; characters and components, WEISE, pp. 430–433, t. c.  
*Clanis pilosula*, p. 429, *opaca*, p. 430, Ceylon, WEISE, t. c. n. spp.  
*Coccidula rufa* var. n. *nigropunctata*, REITTER, p. 220, Wien. ent. Zeit. xix.  
*Coccinella* 11-*punctata* var. n. *ocellata*, CHURCHEVILLE, p. 26, Miscell. ent. viii; *C. 14-pustulata* var. n. *turkestanica*, FLEISCHER, p. 116, Wien. ent. Zeit. xix; *C. sinuato-marginata* var. n. *trilobata*, FLEISCHER, p. 245, t. c.; *C. distincta*, habits, DONISTHORPE, p. 173, Ent. Rec. xii.  
*C. bodemeyeri*, Asia Minor, WEISE, p. 166, Bodemeyer (131), and p. 140, Deutsche ent. Zeitschr. 1900; *C. mombonensis*, Africa, WEISE, p. 123, t. c. : n. spp.  
*Cryptogonus orbiculus* and *fulvocinctus* varr., WEISE, pp. 424, 425, t. c.  
*Cydonia zonata*, p. 123, *angulifera*, p. 124, E. Africa, WEISE, t. c. n. spp.  
*Diomus rubidus* var. n. *morio*, FLEISCHER, p. 120, Wien. ent. Zeit. xix.  
*Dysis orientalis*, E. Africa, WEISE, p. 125, Deutsche ent. Zeitschr. 1900, n. sp.  
*Empia vittata*, Ceylon, WEISE, p. 444, t. c. n. sp.  
*Epilachna bisseptemnotata* = (*schoensis* Gorh.), *E. godarti* characters, WEISE, p. 115, t. c.; *E. tarda*, *morosa*, p. 114, *severini*, p. 115, E. Africa, WEISE, t. c.; *E. khasiensis*, India, p. 417, *misera*, Ceylon, p. 420, WEISE, t. c.; *E. nativitatis*, Christmas Is., ARROW, p. 95, pl. x, fig. 6, Monogr. Christmas Island : n. spp.  
*Epismilia* n. n. for *Smilia* Weise, COCKERELL, Sci. Gossip 1900, p. 606.  
*Exochomus puniceipennis*, Buchara, SEMENOW, p. 684, Horæ Soc. ent. Ross. xxxiv, n. sp.  
*Halyzia* 14-*guttata* var. n. *nigripennis*, FLEISCHER, p. 117, Wien. ent. Zeit. xix.  
*H. reitteri*, Margelan, FLEISCHER, p. 117, t. c. n. sp.  
*Hippodamia* 7-*maculata* var. n. *equiseti*, MEIER, p. 78, Ent. Nachr. xxvi.  
*Horniolus* n. g. near *Nephus*, p. 442, for *H. dispar*, n. sp. Ceylon, p. 443, WEISE, Deutsche ent. Zeitschr. 1900.  
*Hyperaspis transversoguttata* var. n. 10-*guttata*, *H. desertorum* var. n. *collaris*, FLEISCHER, p. 119, t. c.  
*Nephus spilotus*, Irkutsk, *patruus*, Ceylon, WEISE, p. 441, Deutsche ent. Zeitschr. 1900, n. spp.  
*Notolipernes* n. n. for *Lipernes* Blackb. nec Waterh., BLACKBURN, p. 68, Tr. R. Soc. S. Austral. xxiv.  
*Ortalia* 12-*maculata*, W. Africa, WEISE, p. 129, Deutsche ent. Zeitschr. 1900; *O. horni*, p. 433, *minuta*, p. 434, Ceylon, WEISE, t. c.; *Pharus numidicus* (Sicard), Algeria, PIC, p. 91, Echange xvi, n. sp.; *P. horni*, Ceylon, WEISE, p. 434, Deutsche ent. Zeitschr. 1900 : n. spp.  
*Platynaspis ceylonica*, Ceylon, WEISE, p. 422, t. c. n. sp.  
*Pullus victoris* var. *obsignatus*, WEISE, p. 435, t. c.  
*P. severus*, E. Africa, WEISE, p. 131, t. c.; *P. musculus*, p. 438, *gratiosus*, p. 439, Ceylon, WEISE, t. c. n. spp.  
*Rodolia ferruginea*, p. 130, *picicollis*, p. 131, E. Africa, WEISE, t. c. n. spp.  
*Scotoscymnus* n. n. for *Scymnomorphus* Weise nec Bl., WEISE, p. 458, Deutsche ent. Zeitschr. 1900.

- Scymnus rubromaculatus* var. *triangulifer*, *S. dorsalis* n. n. for *mongolicus*, infra, FLEISCHER, p. 235, Wien. ent. Zeit. xix; *S. frontalis* var. n. 4-guttatus, FLEISCHER, p. 120, t. c.
- S. (Pullus) mongolicus*, Mongolia, FLEISCHER, p. 119, t. c.; *S. (Nephus) crucifer*, Buchara, FLEISCHER, p. 235, t. c. n. spp.
- Semichnoodes ceylonica*, Ceylon, WEISE, p. 428, Deutsche ent. Zeitschr. 1900, n. sp.
- Solanophila firma*, *semmiona*, p. 117, *spretula*, p. 118, *soluta*, p. 119, Africa, WEISE, t. c. n. spp.
- Sticholotis horni*, Ceylon, WEISE, p. 429, t. c. n. sp.
- Tropha* n. g. near *Solanophila*, p. 121, for *T. variabilis*, p. 122, n. sp., East Africa, p. 122, WEISE, t. c.

## CORYLOPHIDÆ and PSEUDOCORYLOPHIDÆ.

[Cf. CASEY (229), DODERO (336), REITTER (1101).]

- Classification and revision of N. American, CASEY, pp. 60-75, J. N. York Ent. Soc. viii.
- Anisomeristes masoni* n. n. for *A. basalis* Matth. nec Sharp, REITTER, p. 132, Wien. ent. Zeit. xix.
- Aphanocephalus hemisphaericus* var. *birmanicus*, DODERO, p. 565, Ann. Mus. Genova xl.
- A. fœæ*, Burma, id. p. 566, t. c. n. sp.
- Arthrolips nimius*, p. 72, *cinctus*, *sparsus*, p. 73, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.
- Bathona* n. g. for *B. carolineæ*, *virginica*, *convexa*, *sphaericula*, n. spp., N. America, CASEY, t. c.
- Clypeastodes* n. g. for *Clypeaster maderæ* Kr., CASEY, p. 70, t. c.
- Corylophodes impunctatus*, *subtropicus*, N. America, CASEY, p. 63, t. c. n. spp.
- Eutirilia* n. g., p. 65, for *E. brunnea*, n. sp., California, p. 66, CASEY, t. c.
- Gronerus* n. g., p. 63, for *G. sticticus*, *fascicornis*, *hesperus*, *lævis*, n. spp., N. America, p. 64, and *truncatus* Lec., CASEY, t. c.
- Molamba* n. g. for part of *Sacium*, with *M. obesa*, *specularis*, *parvula*, *ornata*, p. 71, *decora*, p. 72, n. spp., N. America, CASEY, t. c.
- Orthoperus princeps*, p. 66, *texanus*, *micros*, *arizonicus*, *alutaceus*, N. America, *bahamicus*, Bahamas, p. 67, CASEY, t. c. n. spp.
- Rypobius minutus*, Texas, CASEY, p. 65, t. c. n. sp.
- Sacium formosum*, note on, DODERO, p. 565, Ann. Mus. Genova xl.
- S. montanum*, *nigrum*, N. America, CASEY, p. 70, J. N. York. Ent. Soc. viii, n. spp.
- Sericoderus chobauti*, S. France, REITTER, p. 82, Deutsche ent. Zeitschr. 1900; *S. quadratus*, p. 68, *debilis*, p. 69, N. America, CASEY, J. N. York Ent. Soc. viii : n. spp.



(B.) *HYMENOPTERA.*

The superfamilies, pp. 2-4, the families, pp. 190-205, of *Hymenoptera*; ASHMEAD, P. U. S. Mus. xxiii.

ASHMEAD continues his papers on the classification of the Order, dealing with his superfamily Vespoidæ, which includes not only *Diploptera*, but also *Pompilidæ*, *Chrysididæ*, *Bethylidæ*, *Trigonalidæ*, and the *Scolioid* families of *Fossoria*, Canad. Ent. xxxii.

The *Hymenoptera* of the W. Indies, 1290 species, ASHMEAD (40).

Anatomy and development of male armature; nomenclature of parts; supposed male and female homologues, ZANDER (1422).

Fat-body and oenocytes of *Apis*, KOSCHEVNIKOV (759).

Parthenogenesis of honey-bee, WEISMANN (1404).

*ACULEATA.*

## APIDÆ.

[The following memoirs relate to *Apidæ*, viz.:—ALFKEN (15-19, 21), ASHMEAD (40), BUTTEL-REEPEN (212, 213), BUYSSON (216, 218), CAMERON (223), COCKERELL (271-277, 279), DUCKE (351), FREY-GESSNER (448), FRIESE (449-458), GALE (483), KIRBY (723, 724), KOSCHEVNIKOV (759), KRIECHBAUMER (783), LIE-PETERSEN (823), LUDWIG (837), MICHAELIS (908), PERKINS (991), ROBERTSON (1123), SAUNDERS (1148), SCHMIEDEKNECHT (1155), STOYEL (1286), TITUS (1324), WEISMANN (1404).]

Visits of bees to flowers in Europe and N. America, LUDWIG (837).

Male copulatory organs of *Apis mellifica*, MICHAELIS (908).

*Agapostemon*; characters of species found in Colorado, TITUS, pp. 303, 304, Canad. Ent. xxxii.

*A. semimelleus, chapadensis*, Brazil, COCKERELL, p. 376, P. Ac. Philad. 1900, n. spp.

*Andrena nyctemera*, habits, habitat, PIGEOT, p. 186, Bull. Soc. ent. France 1900; *A. apacheorum* varr., COCKERELL, p. 403, Ann. Nat. Hist. v.

*A. porterae*, p. 401, *xanthigera*, p. 402, *albovirgata*, p. 403, *segregans*, p. 404, *nitidior*, p. 406, *semirufa*, p. 407, New Mexico, COCKERELL, Ann. Nat. Hist. v; *A. sapellonis*, New Mexico, COCKERELL, p. 19, t. c. : n. spp.

*Anthidium*; subg. n. *Dianthidium* q. v.

*A. porterae*, New Mexico, COCKERELL, p. 411, Ann. Nat. Hist. v, n. sp.

*Anthophora bomboidea* var. n. *neomexicana*, COCKERELL, p. 408, t. c.

*A. porterae*, New Mexico, COCKERELL, p. 407, t. c. n. sp.

*Anthophorula* Cock. merged in *Exomalopsis*, FRIESE, p. 247, Ann. Hofmus. Wien xiv.

*Anthrena nigriceps* and allies, characters, ALFKEN, pp. 3-7, Ent. Nachr. xxvi; *A. compta* ♂, SCHMIEDEKNECHT, p. 228, Termes. Fuzetek xxiii.

*A. bremensis*, Germany, ALFKEN, p. 6, Ent. Nachr. xxvi; *A. berenice*, p. 220, *isis, arsinoë*, p. 221, *argyreofasciata*, p. 222, *marsæ*, p. 223, *kamarti*, p. 224, *dido*, p. 225, *tunetana*, p. 226, *smaragdina*, p. 227,

- byrsicola*, p. 228, N. Africa, SCHMIEDEKNECHT, Termes. Fuzetek xxi; *A. consimilis*, p. 177, *knuthi*, p. 178, *japonica*, p. 179, Japan, ALFKEN, Ent. Nachr. xxvi : n. spp.
- Augochlora vesta* var. n. *cupreola*, p. 363, *A. calypso* subsp. n. *cupreotincta*, *eucalypso*, p. 364, *A. titania* Sm. referred to *Corynura*, p. 375, COCKERELL, P. Ac. Philad. 1900.
- A. cyaneoviridis*, *claviventris*, St. Vincent, ASHMEAD, p. 217, Tr. ent. Soc. London 1900; *A. spinole*, p. 357, *polychroa*, *smithiana*, p. 358, *heterochroa*, p. 359, *goeldii*, *wallacei*, p. 360, *chapade*, p. 361, *brasiliانا*, p. 362, *monochroa*, p. 364 with subsp. *moreira*, p. 365, *janeirensis*, p. 366, *mulleri*, p. 367, *callichroa*, p. 368, *iheringi*, *cærulior*, p. 369, *batesi*, *belti*, p. 370, *foxiana*, p. 371, with var. *perimelas*, p. 372, Brazil, COCKERELL, P. Ac. Philad. 1900 : n. spp.
- Bicornelia* n. g. near *Caupolicana*, p. 239, for *B. serrata*, n. sp., Mexico, p. 240, FRIESE, Ann. Hofmus. Wien xiv.
- Bombomelecta lurrae*, New Mexico, COCKERELL, p. 361, Canad. Ent. xxxii, n. sp.
- Bombus soroensis*, variation, ALFKEN, pp. 184-190, Ent. Nachr. xxvi; *B. proximus* and var. *howardi*, COCKERELL, p. 401, Ann. Nat. Hist. v; *B.* and *Psithyrus* in N. Norway, LIE-PETTERSEN (823).
- Calliopsis coloradensis coloratipes* = (*C. flavifrons coloratipes*), ♀ described, COCKERELL, p. 64, Entomologist xxxiii.
- Camptopœum handlirschi*, Biskra, FRIESE, p. 86, Ent. Nachr. xxvi, n. sp.
- Caupolicana* = (*Megacilisa*), COCKERELL, p. 570, Ent. News Philad. xi.
- C. peruviana*, Peru, FRIESE, p. 180, Ent. Nachr. xxvi; *C. bicolor*, p. 242, *adusta*, p. 243, Chili, FRIESE, Ann. Hofmus. Wien xiv : n. spp.
- Centris atra* ♂, id. t. c., p. 118.
- Centris atra*, Brazil, *clypeata*, *sericea*, Mexico, *lateritia*, p. 41, *mocsaryi*, *scopipes*, *rufipes*, *bucephala*, p. 42, *lutea*, *femoralis*, *smithii*, p. 43, S. America, *birkmannii*, *limbata*, Texas, *breviceps*, Amazons, *labrosa*, Centr. America, p. 44, *proxima*, *nigripes*, *tricolor*, *klugii*, p. 45, *inermis*, *flavothoracica*, p. 46, *pseudoephippia*, *ruficauda*, *intermixta*, *cælebs*, *flavohirta*, *nigrofasciata*, p. 47, *niveofasciata*, *minor*, p. 48, S. America, FRIESE, Termes. Fuzetek xxiii; *C. weilenmanni*, *pauloensis*, p. 117, *horvathi*, p. 118, FRIESE, t. c. : n. spp.
- Ceratina bifida*, Asia Minor, FRIESE, p. 86, Ent. Nachr. xxvi; *C. madecassa*, Nossi-Bé, FRIESE, p. 262, Abh. Senckenb. Ges. xxvi; *C. nigrita*, St. Vincent, ASHMEAD, p. 212, Tr. ent. Soc. London 1900 : n. spp.
- Chrysanthoda trochanterica*, Brazil, FRIESE, p. 66, Ent. Nachr. xxvi, n. sp.
- Calioxys*; characters of New Mexican, COCKERELL, pp. 297-301, Canad. Ent. xxxii; *C. octodentata*, host is *Megachile mendica*, Fox, Ent. News Philad. xi.
- C. (lucrosa* var. ?) *porterae*, p. 298, *apacheorum*, p. 299, *grindeliæ*, p. 300, *ribis*, p. 301, New Mexico, COCKERELL, Canad. Ent. xxxii : n. spp.
- Colletes*; deep burrows, SMITH, p. 208, J. N. York Ent. Soc. viii; *C. prosopidis*, ♀, COCKERELL, p. 244, Entomologist xxxiii.
- C. græffei*, Centr. Europe, p. 74, *seitzii*, Yokohama, p. 76, ALFKEN, Ent. Nachr. xxvi; *C. inconspicua*, Abd-el-Kuri, KIRBY, p. 23, Bull. Liverp. Mus. iii; *C. nigrifrons*, Colorado, TITUS, p. 304, Canad. Ent. xxxii; *C. algarobice*, New Mexico, COCKERELL, p. 244, Entomologist xxxiii; *C. nitidicollis*, p. 182, *rugicollis*, p. 183, *murinus*, p. 184, S. America, FRIESE, Ent. Nachr. xxvi : n. spp.
- Crocisa forbesii*, *uniformis*, Sokotra, KIRBY, p. 21, Bull. Liverp. Mus. iii, n. spp.
- Dasypoda schlettereri*, S.E. Europe, FRIESE, p. 87, Ent. Nachr. xxvi, n. sp.
- Dianthidium* subg. n. of *Anthidium* for *A. curvatum* Sm. and other N. American species, COCKERELL, p. 412, Ann. Nat. Hist. v.

- Dufourea alboclypeata*, Egypt, FRIESE, p. 86, Ent. Nachr. xxvi; *D. subcyanea*, St. Vincent, ASHMEAD, p. 215, Tr. ent. Soc. London 1900 : n. spp.
- Epeolus occidentalis* var. n. *segregatus*, p. 361, *E. remigatus* var. *martini*, p. 362, COCKERELL, Canad. Ent. xxxii.
- E. rufotegularis* Grenada, ASHMEAD, p. 211, Tr. ent. Soc. London 1900, n. sp.
- Epicharis maculata* varr. n. *nigroclypeata*, *grandior*, FRIESE, p. 40, Termes. Fuzetek xxiii.
- E. cockerelli*, Brazil, FRIESE, p. 119, t. c.; *E. albifacies*, *lindigii*, *schrottkyi*, p. 39, *obscura*, (♂, p. 119), *iheringii*, *metatarsalis*, p. 40, S. America, FRIESE, t. c. n. spp.
- Eucera difficilis*, habits, ALFKEN, Ent. Nachr. xxvi, p. 157.
- Euglossa* : remarks on 6 species as supplement to the 1899 paper, FRIESE, pp. 121, 122, Termes. Fuzetek xxiii.
- Exomalopsis*, monograph, FRIESE, pp. 247–270, Ann. Hofmus. Wien xiv.
- E. aureoserica*, Brazil, p. 253, *collaris*, *tomentosa*, p. 254, *texana*, p. 264, Texas, *E. ? chilensis*, Chili, *E. latitarsis*, p. 266, *nigripes*, *chalybæa*, p. 267, Brazil, *serrata*, Mexico, p. 270, FRIESE, t. c. n. spp.
- Fidelia* n. g. near *Podalirius*?, p. 244, for *F. paradoxa*, n. sp., S. Africa, p. 245, FRIESE, t. c.
- Halictus aquilæ*, ♂, COCKERELL, p. 415, Ann. Nat. Hist. v.
- H. flavovittatus*, Sokotra, KIRBY, p. 20, Bull. Liverp. Mus. iii; *H. decemmaculatus*, Nossi-Bé, FRIESE, p. 265, Abh. Senckenb. Ges. xxvi; *H. andrewsi*, fig. 8, *binghami*, p. 9, pl. xiv, KIRBY, p. 86, Monogr. Christmas Island; *H. cyaneus*, p. 219, *plumbeus*, *auratus*, *sancti-vicenti*, p. 220, St. Vincent, ASHMEAD, Tr. ent. Soc. London 1900; *H. huttoni*, New Zealand, CAMERON, p. 17, Tr. N. Zealand Inst. xvii : n. spp.
- Hyleosoma longiceps*, St. Vincent, ASHMEAD, p. 215, Tr. ent. Soc. 1900, n. sp.
- Hypomacrotera callops* var. n. *persimilis*, COCKERELL, p. 64, Entomologist xxxiii.
- Koptorthosoma* sp. from New Britain, SHARP, p. 388, Willey Results iv.
- Lithurgus gibbosus*, *L. compressus* Sm. is the ♂, COCKERELL, p. 487, Amer. Natural. xxxiv.
- Megachile* ; the New Mexican species, revised, COCKERELL, pp. 7–18, Ann. Nat. Hist. vi.
- M. punctatissima*, p. 20, *paucipunctulata*, p. 21, Sokotra, KIRBY, Bull. Liverp. Mus. iii; *M. sikoræ*, Madagascar, VOELTZKOW, p. 261, Abh. Senckenb. Ges. xxvi; *M. rotundipennis*, p. 87, *nivescens*, p. 88, Christmas Is., KIRBY, Monogr. Christmas Island; *M. newberryæ*, New Mexico, COCKERELL, p. 244, Entomologist xxxiii; *M. sapellonis*, p. 7, *monardarum*, p. 11, *soledadensis*, p. 12, *cleomis*, p. 13, *prosopidis*, p. 16, *chilopsidis*, *populi*, p. 17, *vallorum*, *heterodonta*, p. 18, New Mexico, COCKERELL, Ann. Nat. Hist. vi; *M. tridentata*, p. 213, *minima*, p. 214, St. Vincent, ASHMEAD, Tr. ent. Soc. London 1900 : n. spp.
- Megacilissa tomentosa* var. n. *steinheili*, FRIESE, p. 244, Ann. Hofmus. Wien xiv.
- M. magretti*, Venezuela, FRIESE, p. 243, Ann. Hofmus. Wien xiv; *M. (Piloglossa) virgili*, p. 180, *tarsata*, p. 181, S. America, FRIESE, Ent. Nachr. xxvi : n. spp.
- Megalopta* (*Megaloptidia* subg. n.) *contradicta*, Santarem, COCKERELL, p. 373, P. Ac. Philad. 1900, n. sp.
- Megaloptidia* subg. n. cf. *Megalopta*.
- Melipona nigripes*, Guatemala, *lunulata rufescens*, *nigrescens*, p. 381, *eburnea*, *rufipes*, *flavolineata*, *fuscipes*, *peruviana*, p. 382, *cærulea*, p. 394, S. America, FRIESE, Termes. Fuzetek xxiii, n. spp.
- Melissa imperialis*, St. Vincent, ASHMEAD, p. 211, Tr. ent. Soc. London



- 1900; *M. diabolica*, p. 65, *maculata*, *cærulea*, *violacea*, *viridis*, p. 66, Brazil, FRIESE, Ent. Nachr. xxvi : n. spp.
- Melissodes trifasciatella*, St. Vincent, ASHMEAD, p. 210, Tr. ent. Soc. London 1900, n. sp.
- Melitta hispanica*, Barcelona, *albofasciata*, Turkestan, *tomentosa*, Fiume, p. 85, FRIESE, Ent. Nachr. xxvi, n. spp.
- Nomada atrata* Sm. = (*brevicornis* Schmied.), SAUNDERS, p. 204, Ent. Mag. xxxvi.
- N. illinoensis*, *parva*, Illinois, ROBERTSON, p. 294, Canad. Ent. xxxii; *N. xanthophila*, New Mexico, COCKERELL, p. 415, Ann. Nat. Hist. v : n. spp.
- Nomia viridilimbata* ♂ ♀, BUYSSON, p. 178, Ann. Soc. ent. France lxix.
- Nomia saussurei*, Nossi-Bé, FRIESE, p. 263, Abh. Senckenb. Ges. xxvi : n. sp.
- Osmia*; monograph of palæarctic, DUCKE, Ber. Ver. Innsbruck xxv; *O. parietina* Curt. = (*angustula* Zett.), characters, SAUNDERS, p. 51, Ent. Mag. xxxvi; *O. lignaria* var., p. 409, *O. nigrifrons* var. n. *subaustralis*, p. 410, COCKERELL, Ann. Nat. Hist. v; *O. longispina* sexes, nesting, pl. x, p. 666, R. DU BUYSSON, Ann. Soc. ent. France lxviii.
- O. purpurata*, p. 134, *epeoliformis*, p. 145, Algeria, *magretti*, Milan, p. 205, *leucopyga*, Algeria, p. 223, *saxicola*, Triest, p. 226, *friesiana*, p. 249, *alfkenii*, p. 263, Algeria, *kohlii*, Sicily, p. 271, DUCKE, Ber. Ver. Innsbruck xxv; *O. pulsata*, Tunis, BUYSSON, p. 668, Ann. Soc. ent. France lxviii; *O. (Melanosmia) ribifloris*, New Mexico, COCKERELL, p. 410, Ann. Nat. Hist. v : n. spp.
- Oxæa rufa*, Brazil, FRIESE, p. 244, Ann. Hofmus. Wien xiv, n. sp.
- Pachyosmia* subg. n. of *Osmia*, for *emarginata* etc., DUCKE, p. 18, Ber. Ver. Innsbruck xxv.
- Panurginus porterae*, New Mexico, COCKERELL, p. 364, Canad. Ent. xxxii, n. sp.
- Perdita baccharidis*, p. 61, *melina*, *heterothecæ*, p. 62, Arizona, *heliotropii*, Chihuahua, p. 63, COCKERELL, Entomologist xxxiii, n. spp.
- Podalirius fulvictectus*, *antennatus*, Sokotra, p. 22, *pyramidalis*, Abd-el-Kuri, p. 23, KIRBY, Bull. Liverp. Mus. iii, n. spp.
- Prosopis*: the species of N. W. Germany, table of characters and remarks, ALFKEN (21).
- P. palustris*, England, PERKINS, p. 49, Ent. Mag. xxxvi; *P. helvetica*, p. 228, *tristis*, p. 230, Switzerland, FREY-GESSNER, Mt. Schweiz. ent. Ges. x : n. spp.
- Protosmia* subg. n. of *Osmia*, for *glutinosa* etc., DUCKE, p. 12, Ber. Ver. Innsbruck xxv.
- Ptilothrix nigrita*, *P. ? similis*, Brazil, FRIESE, p. 272, Ann. Hofmus. Wien xiv, n. spp.
- Rathymus michaelis*, *armatus*, S. America, FRIESE, p. 65, Ent. Nachr. xxvi, n. spp.
- Rhophites foveolatus*, Greece, FRIESE, p. 85, t. c. n. sp.
- Sphecodes fortior*, relations with *Anthidium paroselæ*, NEWBERRY, p. 94, Psyche ix.
- S. nigratus*, *solitarius*, p. 221, *thoracicus*, p. 222, St. Vincent, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.
- Tetralonia duplofasciata*, Colombia, KRIECHBAUMER, p. 106, pl. i, fig. 6, Berlin. ent. Zeitschr. xlv, n. sp.
- Tetrapedia*; monograph, FRIESE, pp. 274, 303, Ann. Hofmus. Wien xiv.
- T. rugulosa*, *peckoltii*, p. 282, *curvitaris*, *amplitaris*, p. 283, *clypeata*, *pyramidalis*, p. 285, *bunchosia*, p. 286, *glaberrima*, *nigripes*, p. 287, *serraticornis*, p. 288, *picta*, p. 290, *muelleri*, *maculata*, p. 291, *flavi-ventris*, p. 292, *piliventris*, p. 293, *goeldiana*, p. 295, *iheringii*, p. 296, *antennata*, p. 297, *ferruginea*, *globulosa*, p. 298, *michaelis*, *pallidi-*



- pennis*, p. 299, *elongata*, *klugi*, p. 300, *saussurei*, with varr. *griseus* and *fusciventris*, Mexico, p. 301, FRIESE, t. c. n. spp.
- Thrausmus* n. g. *Andrenides* parasitic, for *T. grandidieri* n. sp., Madagascar, BUYSSON, p. 177, Ann. Soc. ent. France lxix.
- Trigona* sp., nest from Singapore, WATERHOUSE, p. v, P. ent. Soc. London 1900.
- T. voeltzkowi*, Madagascar, FRIESE, p. 260, Abh. Senckenb. Ges. xxvi ; *T. tomentosa*, *conradti*, *langhofferi*, *lendiana*, *cameroonensis*, p. 383, *buschirii*, *hildebrandti*, *magrettii*, Africa, *latipes*, Malacca, p. 384, *fuscipennis*, Guatemala, *lacteipennis*, *fulvohirta*, *helleri*, p. 385, *duckei*, *muelleri*, *schrottkyi*, S. America, *schulthessi*, Guatemala, p. 386, *nigri-facies*, *kohli*, *braueri*, *dallatorreana*, p. 387, *williana*, *latitarsis*, p. 388, *flaveola*, *obscura*, *rhumbleri*, *heideri*, S. America, *hellwegeri*, Mexico, p. 389, *goettei*, *mocsaryi*, *doederleini*, p. 390, *ziegleri*, *handlirschii*, *droryana*, *goeldiana*, p. 391, *saiqui*, *emerina*, S. America, *voeltzkovi*, Madagascar, p. 392, *alfkeni*, *heckeli*, *butteli*, *franki*, *graefferi*, p. 393, *portoi*, p. 394, S. America, FRIESE, Termes. Fuzetek xxiii ; *T. nigro-cyanea*, St. Vincent, ASHMEAD, p. 208, Tr. ent. Soc. London 1900 : n. spp.
- Xenoglossa patricia* var. n. *angustior*, COCKERELL, p. 64, Entomologist xxxiii.
- Xylocopa cantabrita* ♂, ALFKEN, p. 77, Ent. Nachr. xxvi.
- X. rogenhoferi*, Persia, *wagneri*, China, FRIESE, p. 86, Ent. Nachr. xxvi ; *X. tricuspidifera*, Peru, KRIECHBAUMER, p. 106, pl. i, fig. 7, Berlin. Ent. Zeitschr. xlv : n. spp.

### VESPIDÆ (incl. EUMENIDÆ).

- [Cf. ASHMEAD (40, 41), BERG (99), CAMERON (222), KINCAID (712), KIRBY (723), KRIECHBAUMER (783), RUDOW (1142), SAUSSURE (1149), SCHMIEDKNECHT (1156).]
- Biology of Madagascar wasps ; peculiarity of colour, and of forms of nests, SAUSSURE (1149).
- The nests of wasps, RUDOW (1142).
- Belonogaster*, nests, SAUSSURE, p. 206, Abh. Senckenb. Ges. xxvi.
- B. apicalis*, *bicolor*, p. 208, *pomicolor*, *ornatus*, p. 209, *malagassus*, p. 210, Madagascar, SAUSSURE, t. c. n. spp.
- Eumenes granti*, Sokotra, KIRBY, p. 18, Bull. Liverp. Mus. iii ; *E. sakalavus*, Madagascar, SAUSSURE, p. 235, Abh. Senckenb. Ges. xxvi : n. spp.
- Icaria*, nests, SAUSSURE, p. 212, Abh. Senckenb. Ges. xxvi ; *I. ferruginea* ♂, CAMERON, p. 495, Ann. Nat. Hist. vi.
- I. grossepunctata*, Sokotra, p. 20, *aterrima*, Abd-el-Kuri, p. 23, KIRBY, Bull. Liverp. Mus. iii ; *I. prasina*, *regina*, p. 220, *pulchella*, p. 223, *fraterna*, *interjecta*, p. 225, *ducalis*, p. 226, *sakalava*, p. 228, *venustula*, p. 231, Madagascar, SAUSSURE, t. c. ; *I. quadrimaculata*, *ornaticeps*, p. 496, *rufocollaris*, p. 497, *nigroplagiata*, p. 498, *carinata*, p. 499, *wroughtoni*, p. 500, *fuscipennis*, p. 501, *tinctipennis*, p. 503, *fulvinerva*, p. 504, India, CAMERON, Ann. Nat. Hist. vi : n. spp.
- Labus armatus*, Khasia Hills, CAMERON, p. 536, t. c. n. sp.
- Monobia insularis*, Grenadines, ASHMEAD, p. 233, Tr. ent. Soc. London 1900, n. sp.
- Montezuma bisulcata*, Khasia Hills, CAMERON, p. 535, Ann. Nat. Hist. vi, n. sp.
- Odynerus labiatus*, *vespiformis*, characters, habitat, BERG, pp. 237-240, Comun. Mus. Buenos Aires i ; *O. andreanus* ♂, BUYSSON, p. 178, Ann. Soc. ent. France lxix.

- O. (Microdynerus) osiris*, p. 229, *O. (Hoplomerus) hamilcar*, p. 230, *hadrubal*, p. 231, N. Africa, SCHMIEDEKNECHT, Termes. Fuzetek xxiii ; *O. malagassus*, p. 237, *kova*, p. 238, Madagascar, SAUSSURE, Abh. Senckenb. Ges. xxvi ; *O. hindostanus*, p. 504, *antoni*, p. 505, India, CAMERON, Ann. Nat. Hist. vi ; *O. sancti-vicenti*, St Vincent, p. 233, *grenadensis*, Grenada, p. 234, ASHMEAD, Tr. ent. Soc. London 1900 ; *O. magdalene*, Colombia, KRIECHBAUMER, p. 105, pl. i, fig. 8, Berlin. ent. Zeitschr. xlv : n. spp.
- Polistes*, aberrant oviposition, SHARP, p. 388, pl. xxxv, fig. 14, Willey Results iv.
- P. rothneyi*, p. 410, *rufolineatus*, p. 411, *rugifrons*, p. 412, *hasianus* ♀, *nigritarsis*, p. 413, *ephippium*, *hasianus* ♀, p. 415, *wattii*, p. 416, *japonicus*, p. 417, *erythrocerus*, p. 418, Japan, CAMERON, Ann. Nat. Hist. vi ; *P. sikore*, Madagascar, SAUSSURE, p. 233, Abh. Senckenb. Ges. xxvi : n. spp.
- Pterochilus pharaonum*, Egypt, SCHMIEDEKNECHT, p. 232, Termes. Fuzetek xxiii, n. sp.
- Rhynchium argentatum*, characters, synonymy, *R. carbonarium* referred to *Pararhynchium*, CAMERON, p. 532, Ann. Nat. Hist. vi.
- R. versicolor*, Sokotra, KIRBY, p. 19, Bull. Liverp. Mus. iii ; *R. khasianum*, p. 530, *clypeatum*, p. 531, *lugubrinum*, p. 532, *rugolatum*, p. 533, India, CAMERON, Ann. Nat. Hist. vi : n. spp.
- Vespa vulgaris*, activity in nests in January and February, MOFFAT, Irish Natural. ix, p. 47, BARRINGTON, t. c. p. 108.
- Zethus hemorrhoidalis*, Colombia, KRIECHBAUMER, p. 104, pl. 1, fig. 5, Berlin. ent. Zeitschr. xlv, n. sp.

## HYMENOPTERA FOSSORIA (or SPHEGOIDEA).

[Cf. ADLERZ (11), ANDRE (27, 28), ASHMEAD (40, 41), BINGHAM (121), BOUVIER (165, 166), CAMERON (220, 221), COCKERELL (279), FERTON (418), FOX (442), FRIESE (459), HANDLIRSCH (556, 557, 558), KINCAID (712, 713), KIRBY (723), KOHL (741, 742), KRIECHBAUMER (783), MANTERO (851), MARCHAL (853), MORICE (926), NIELSEN (943), PECKHAM & PECKHAM (982), SCHMIEDEKNECHT (1156), SHARP (1208).]

Habits, ADLERZ (11), BOUVIER (165, 166), FERTON (418), MARCHAL (853), NIELSEN (943) and The instinct of *Sphex*, PECKHAM & PECKHAM (982).

*Agenia diana*, Khasia, CAMERON, p. 19, Ann. Nat. Hist. v, n. sp.

*Alyson picteti* ♀, SCHMIEDEKNECHT, p. 233, Termes. Fuzetek xxiii.

*Ammophila rugicollis* and *rubiginosa* are ♂ ♀ of one species, MORICE, p. 67, Ann. Nat. Hist. v ; *A. sabulosa*, habits, ADLERZ, pp. 163-170, Ent. Tidskr. xxi.

*A. pæcilocnemis*, p. 67, *albotomentosa*, p. 69, *producticollis*, p. 70, Biskra, MORICE, Ann. Nat. Hist. v : *A. arabica*, Sokotra, KIRBY, p. 24, Bull. Liverp. Mus. iii : n. spp.

*Ampulex pilosa*, p. 37, *pulchriceps*, p. 38, E. India, CAMERON, Ann. Nat. Hist. v, n. spp.

*Apterogyna klugi*, Algeria, ANDRÉ, p. 69, Spec. Hym. viii, n. sp.

*Arachnospila septentrionalis*, Alaska, KINCAID, p. 509, P. Washington Ac. ii, n. sp.

*Astata boops*, habits, ADLERZ, pp. 187-191, Ent. Tidskr. xxi.

*Belomicroides* n. g., p. 312, near *Oxybelus*, for *B. schmiedeknechtii* n. sp., Tunis, p. 314, KOHL, Ann. Hofmus. Wien xiv.

*Belomicrus antennalis*, Sarepta, *femoralis*, Transcaspian, KOHL, p. 314, t. c. n. spp.

- Bembex*, instinct and habit of European, FERTON (418); *B. labiatus*, habits, BOUVIER, p. 874, C.R. Soc. Biol. lii.
- B. dissimilis*, Abd-el-Kuri, KIRBY, p. 22, Bull. Liverp. Mus. iii, n. sp.
- Cænolarra* n. g., p. 28, near *Notogonia*, for *C. appendiculata* n. sp., Barrackpore, p. 29, CAMERON, Ann. Nat. Hist. v.
- Calopompilus* n. g. type *P. maculipennis* Smith, ASHMEAD, p. 188, Canad. Ent. xxxii.
- Campsomeris socotrana*, Sokotra, KIRBY, p. 14, Bull. Liverp. Mus. iii, n. sp.
- Cemonus lethifer*, *unicolor*, habits, NIELSEN, pp. 270–272, Vid. Medd. 1900.
- Ceratophorus morio*, habits, burrows, NIELSEN, p. 272, cut, t. c.
- Cerceris*, habits of various Swedish species, ADLERZ, pp. 179–187, Ent. Tidskr. xxi; *C. truncatula*, *labiata*, food-habits, NIELSEN, p. 267, Vid. Medd. 1900.
- C. lobaba*, Sokotra, KIRBY, p. 18, Bull. Liverp. Mus. iii; *C. nigra*, St Vincent, ASHMEAD, p. 227, Tr. ent. Soc. London 1900 : n. spp.
- Ceropales maculata*, note on habits, ADLERZ, p. 195, Ent. Tidskr. xxi.
- C. parva*, Ceylon, CAMERON, p. 20, Ann. Nat. Hist. v, n. sp.
- Clytochrysus chrysostomus*, habits, burrows, NIELSEN, pp. 255–259, cuts, Vid. Medd. 1900.
- Cælocrabro leucostomus*, habits, burrows, NIELSEN, p. 259, cut, t. c.
- Cælocrabro cloëvorax*, Denmark, NIELSEN, p. 260, t. c. n. sp.
- Crabro 5-signatus*, capturing ants, BIGNELL, p. 264, Ent. Mag. xxxvi.
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*Xenacis hungarica*, Hungary, SZÉPLIGETI, p. 30, t. c. n. sp.  
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*Zarhynchus* n. g. type *Tryphon nasutus* Cresson, ASHMEAD, p. 59, P. U. S. Mus. xxiii [cf. *Rhynchothyreus* above].  
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*Biosteres fulvus*, New Guinea, SZÉPLIGETI, p. 65, Termes. Fuzetek xxiii, n. sp.

*Biroia* n. g. *Agathinæ*, for *B. elegans* n. sp., New Guinea, SZÉPLIGETI, p. 62, t. c.

*Blastomorpha* n. g. *Braconinæ*, for *B. decorata* n. sp., New Guinea and *Br. intrudens* Sm., SZÉPLIGETI, t. c.

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*Callihormius* n. g. type *Pambolus bifasciatus* Ashm., not described, ASHMEAD, p. 148, P. U. S. Mus. xxiii.

*Calyptus bicolor*, Hungary, SZÉPLIGETI, p. 218, Termes. Fuzetek xxiii, n. sp.

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*Chelonogastra* n. g. *Braconini*, type *C. koebelei* Ashm., not described, ASHMEAD, p. 139, P. U. S. Mus. xxiii.



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- C. læviceps*, St. Vincent, id. p. 276, t. c. n. sp.
- Cænophanes cingulatus*, Hungary, SZÉPLIGETI, p. 216, Termes. Fuzetek xxiii, n. sp.
- Compsobracon* n. g. type *Exothecus magnificus* Ashm., not described, ASHMEAD, p. 138, P. U. S. Mus. xxiii.
- Crassomicrodus* n. g. type *Microdus fulvescens* Cresson, ASHMEAD, p. 128, t. c.
- Cremnops bicolor*, p. 60, *xanthostigma*, p. 61, New Guinea, SZÉPLIGETI, Termes. Fuzetek xxiii, n. spp.
- Cryptopyge variegata*, Bolivia, *testacea*, E. India, SZÉPLIGETI, p. 283, t. c. n. spp.
- Curriea* n. g. *Braconini*, type *C. fasciatipennis* Ashm., not described, ASHMEAD, p. 137, P. U. S. Mus. xxiii.
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- Diachasma carpocapsæ*, New Zealand, ASHMEAD, p. 357, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Diolcogaster* n. g. type *Microgaster melligaster* Prov., ASHMEAD, p. 132, P. U. S. Mus. xxiii.
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- Ecphylopsis* n. g. *Pambolini*, type *E. nigra* Ashm., not described, ASHMEAD, p. 146, t. c.
- Epimicrodus* n. g. type *Microdus diversus* Cresson, ASHMEAD, p. 129, t. c.
- Épirhyssalus* n. g. type *E. californicus* Ashm., not described, ASHMEAD, p. 142, t. c.
- Episigalphus* n. g. type *E. minutissimus* Ashm., ASHMEAD, p. 125, t. c.
- Euagathis* n. g. *Agathinæ* for *E. bifasciata*, p. 62, *fulvipennis*, *novaguineensis*, p. 63, n. spp., New Guinea, SZÉPLIGETI, Termes. Fuzetek xxiii.
- Eucorystoides* n. n. for *Eucorystes* Marshall 1888, ASHMEAD, p. 368, Canad. Ent. xxxii.
- Eujoppa* n. g. for *E. kriechebaumeri* n. sp., Brazil, SZÉPLIGETI, Termes. Fuzetek xxiii.
- Eumacrocentrus* n. g. type *Gymnoscelis americanus* Cresson, ASHMEAD, p. 120, P. U. S. Mus. xxiii.
- Euphoridea* n. g. *Aphidiini*, type *E. claripennis* Ashm., not described, ASHMEAD, p. 116, t. c.
- Euphoriella* n. g. type *Labeo incertus* Ashm., ASHMEAD, p. 116, t. c.
- Eurobracon* n. g. type *Bracon penetrator* Sm., ASHMEAD, p. 140, t. c.
- Glyptocolastes* n. g. *Rhyssalini*, type *G. texanus* Ashm., not described, ASHMEAD, p. 142, t. c.

- Glyptodoryctes* n. g. type *Hetreospilus caryæ* Ashm., not described, ASHMEAD, p. 144, t. c.
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- Heterospilus terminalis*, Grenada, ASHMEAD, p. 297, Tr. ent. Soc. London 1900, n. sp.
- Holojoppa* n. g. for *H. grandis* n. sp., Bolivia, SZÉPLIGETI, p. 289, Termes. Fuzetek xxiii.
- Hoplitalysis* n. g. *Alysiidæ*, type *H. slossonæ* Ashm., not described, ASHMEAD, p. 105, P. U. S. Mus. xxiii.
- Hypodoryctes* n. g., pp. 542, 548, for *H. sibiricus* n. sp., W. Siberia, p. 550, KOKUJEW, Horæ Soc. ent. Ross. xxxiv.
- Hypomicrogaster* n. g. type *Microgaster zonarius* Say, ASHMEAD, p. 132, P. U. S. Mus. xxiii.
- Ichneutidea* n. g. type *Ichneutes abdominalis* Cresson, ASHMEAD, p. 133, t. c.
- Iphiaulax gracilis*, p. 53, *striatus*, p. 54, New Guinea, SZÉPLIGETI, Termes. Fuzetek xxiii; *I. trinotata*, p. 359, *australiensis*, p. 360, Australia, ASHMEAD, P. Linn. Soc. N. S. Wales xxv; *I. grenadensis*, Grenada, ASHMEAD, p. 294, Tr. ent. Soc. London 1900 : n. spp.
- Ischnopus bifasciatus*, Brazil, *scutellaris*, Honduras, p. 286, *rufus*, Brazil?, p. 287, SZÉPLIGETI, Termes. Fuzetek xxiii, n. spp.
- Kahlia* n. g. *Alysiidæ*, type *K. flavipes* Ashm., not described, ASHMEAD, p. 107, P. U. S. Mus. xxiii.
- Lamadatha* n. g. near *Dacnusa*, p. 538, for *L. testaceipes*, n. sp., Scotland, p. 539, CAMERON, Ann. Nat. Hist. vi.
- Liosigalphus* n. g. type *L. politus* Ashm., not described, ASHMEAD, p. 125, P. U. S. Mus. xxiii.
- Lysitermus terminalis* referred to *Ecphylus* and *L. fascipennis* to *Telebolus*, ASHMEAD, p. 296, Tr. ent. Soc. London 1900.
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- Macrodyctium* n. g. type *Bracon euvræ* Ashm., ASHMEAD, p. 138, P. U. S. Mus. xxiii.
- Macrojoppa nigra*, Chiriqui, p. 283, *rufa*, *hæmatogaster*, p. 284, *pulchra*, *similis*, p. 285, S. America, SZÉPLIGETI, Termes. Fuzetek xxiii, n. spp.
- Macrostomion* n. g. *Rhogadinæ*, for *M. bicolor* n. sp., New Guinea, SZÉPLIGETI, p. 57, t. c.
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- Melanobracon* n. g. type *Bracon simplex* Cresson, ASHMEAD, p. 138, P. U. S. Mus. xxiii.
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- Meteoridea* n. g. *Microdini*, type *M. longiventris* Ashm., not described, ASHMEAD, p. 129, P. U. S. Mus. xxiii.
- Meteorus antipodalis*, Australia, ASHMEAD, p. 353, P. Linn. Soc. N. S. Wales xxv; *M. australis*, Argentina, TOSQUINET, p. 104, Ann. Soc. ent. Belgique xlv : n. spp.
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- Microgaster pinos* Cr. referred to *Urogaster*, ASHMEAD, p. 281, Tr. ent. Soc. London 1900.
- Microjoppa bicolor*, Chiriqui, *fuscipennis*, p. 277, *zonata*, p. 278, *scutellaris*, 1900. [VOL. XXXVII.]

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- Microplitis maculipennis*, New Guinea, SZÉPLIGETI, p. 60, t. c.; *M. carinata*, St Vincent, ASHMEAD, p. 293, Tr. ent. Soc. London 1900 : n. spp.
- Neoblasticus* n. g. type *N. rufipes* Ashm., not described, ASHMEAD, p. 122, P. U. S. Mus. xxiii.
- Neophylax* n. g. *Zelini*, type *N. snyderi* Ashm., ASHMEAD, p. 119, t. c.
- Enonogastra* n. g. type *Mesocrina microrhopalæ* Ashm., ASHMEAD, p. 105, t. c.
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- Oreba* n. g. near *Microdus*, p. 94, for *O. purpurea* n. sp., India, p. 95, CAMERON, Mem. Manchester Soc. xlv, No. 15.
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- Orgiloneura* n. g. *Microdini*, type *O. antipoda* Ashm., not described, ASHMEAD, p. 129, t. c. and *O.* n. g. near *Microdus*, p. 354, for *O. antipoda* n. sp., Australia, p. 355, ASHMEAD, P. Linn. Soc. N. S. Wales xxv.
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- Opiellus* n. n. for *Zetetes* Förster 1862, ASHMEAD, p. 368, Canad. Ent. xxxii.
- Opius niloticus*, Egypt, SCHMIEDEKNECHT, p. 247, Termes. Fuzetek xxiii; *O. grenadensis, tantillus*, Grenada, ASHMEAD, p. 294, Tr. ent. Soc. London 1900 : n. spp.
- Pambolidea* n. g. type *P. yuma* Ashm., not described, ASHMEAD, p. 147, P. U. S. Mus. xxiii.
- Paraecophylus* n. g. *Pambolini*, for *P. websteri* Ashm., not described, ASHMEAD, p. 147, t. c.
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- Pedinopelte maculipennis, mocsaryi*, S. America, *orientalis*, Celebes, p. 287, SZÉPLIGETI, Termes. Fuzetek xxiii, n. spp.
- Phanerotoma kutkowi*, Saratowa, p. 30, *semenowi*, Transcaspien, p. 32, KOKUJEW, Horæ Soc. ent. Ross. xxxii; *P. nova-guineensis*, New Guinea, SZÉPLIGETI, p. 59, Termes. Fuzetek xxiii; *P. australiensis*, Australia, ASHMEAD, p. 354, P. Linn. Soc. N. S. Wales xxv : n. spp.
- Phanerotomella* n. g. *Cheloninæ*, for *P. longipes, sculpturata* n. spp., New Guinea, SZÉPLIGETI, p. 59, Termes. Fuzetek xxiii; *P. nigra, kerteszi*, Hungary, SZÉPLIGETI, p. 218, t. c. : n. spp.
- Platybracon* n. g. *Braconinæ*, for *P. depressus* n. sp., New Guinea, SZÉPLIGETI, p. 49, t. c.
- Pacilojoppa annulicornis*, p. 285, *concolor*, p. 286, S. America, SZÉPLIGETI, t. c. n. spp.
- Protaphidius* n. n. for *Celonotus* Förster 1862, ASHMEAD, p. 368, Canad. Ent. xxxii.
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- Provancheria* n. g. *Alysiidæ*, type *Eubadizon gracilis* Prov., ASHMEAD, p. 109, t. c.
- Pseudapanteles sancti-vicenti*, p. 291, *brunneus, annulicornis*, p. 292, St Vincent, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.
- Rhaconotus scaber*, S. Russia, KOKUJEW, p. 545, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Rhogas rugulosus* var. n., SZÉPLIGETI, p. 217, Termes. Fuzetek xxiii.
- R. ? mandibularis*, India, CAMERON, p. 85, Mem. Manchester Soc. xlv,



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- Sactopus* n. g. *Pambolini*, p. 146, for *S. schwarzi* Ashm., not described, ASHMEAD, p. 146, P. U. S. Mus. xxiii.
- Schauinslandia* n. g. *Helconini*, type *S. femorata* Ashm., not described, ASHMEAD, p. 120, t. c. and *S. n. g.* near *Helcon*, for *S. femorata*, p. 627, *alfkenii*, *pallidipes*, p. 628, n. spp., Chatham Ids., ASHMEAD, Ent. News Philad. xi.
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- Tetragonochora brasiliensis*, Amazons, SZÉPLIGETI, p. 288, Termes. Fuzetek xxiii, n. sp.
- Tricyphus vulpinus*, N. America, SZÉPLIGETI, p. 288, t. c. n. sp.
- Trigonospilus* n. g. *Opiine*, type *T. hopkinsi* Ashm., not described, ASHMEAD, p. 134, P. U. S. Mus. xxiii.
- Trissarthrus* n. g. type *Dimeris maculipennis* Ashm., not described, ASHMEAD, p. 148, t. c.
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- Urogaster balthazari*, Grenada, *nigriceps*, p. 284, *meridionalis*, St Vincent, *grenadensis*, Grenada, p. 285, *disputabilis*, *vulgaris*, p. 286, St Vincent, *solitarius*, Grenada, *leucopus*, St Vincent, p. 287, *xanthopus*, *imitator*, p. 288, *leucostigmus*, *aciculatus*, Grenada, p. 289, *rhomboidalis*, St Vincent, p. 290, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.
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- Zelomorpha* n. g. *Microdini*, type *Z. arizonensis* Ashm., not described, ASHMEAD, p. 129, t. c.

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*Adelencyrtus* n. g. type *Encyrtus chionaspidis* How., ASHMEAD, p. 401, P. U. S. Mus. xxii.

*Ænasia chapadæ*, Brazil, ASHMEAD, p. 371, t. c. n. sp.

*Agamerion ceruleiventris*, Australia, ASHMEAD, p. 340, P. Linn. Soc. N. S. Wales xxv, n. sp.

*Anagyrus pallidipes*, N. America, ASHMEAD, p. 354, P. U. S. Mus. xxii, n. sp.

*Anastatus alboclavus*, p. 261, *aurifrons*, p. 262, St Vincent, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.

*Anusia neomexicana*, N. America, ASHMEAD, p. 355, P. U. S. Mus. xxii, n. sp.

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*Aphidencyrtus* n. g. type *Encyrtus aphidiphagus* Ashm., ASHMEAD, p. 398, P. U. S. Mus. xxii.

*Aphytis* n. g. *Aphelininæ*, for *A. chilensis* n. sp., Chili, HOWARD, p. 168, Canad. Ent. xxxii.

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*Berecyrus floridanus*, N. America, ASHMEAD, p. 365, P. U. S. Mus. xxii, n. sp.

*Blastophaga piceipes*, p. 250, *insularis*, p. 251, St Vincent, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.

*Brachista pallida*, N. America, from eggs of *Odonata*, ASHMEAD, p. 616, Ent. News Philad. xi, n. sp.

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*Centrobia odonata*, N. America, ASHMEAD, p. 616, Ent. News Philad. xi, n. sp.

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*Chrysoplatycerus howardii*, Mexico, ASHMEAD, p. 405, t. c. n. sp.

*Coccencyrtus* n. g. for *Encyrtus ensifer* How., ASHMEAD, p. 383, t. c.

*Coccobius diaspidis*, N. America, ASHMEAD, p. 408, t. c. n. sp.

*Coccophoctonus* n. g. *Encyrtinæ*, for *C. dactylopii* n. sp., Australia, ASHMEAD, p. 375, t. c.

- Cælocyba* n. g. *Pteromalidæ*, for *C. nigrocincta* n. sp., Sydney, ASHMEAD, P. Linn. Soc. N. S. Wales xxv.
- Derosternus albipes*, Java, ZEHNTNER, p. 8 (1428), n. sp.
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- Metagea kirbyi*, p. 337, *rufiventris*, p. 338, Australia, ASHMEAD, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Metapelma cubensis*, Cuba, ASHMEAD, p. 257, Tr. ent. Soc. London 1900, n. sp.
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- Ooencyrtus* n. g. type *Encyrtus anasæ* Ashm., ASHMEAD, p. 381, t. c.
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*Athalia decorata*, Irkutsk, KONOW, p. 120, Ent. Nachr. xxvi, n. sp.  
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## ACRÆIDÆ and HELICONIIDÆ.

- Acrœa*; larva and pupa figured, *A. petrœa*, pl. xlvi, figg. 1–3, *encedon*, figg. 4–6, *rahira*, figg. 7–9, *buxtoni*, figg. 10–12, pp. 294, 295, FAWCETT, Tr. Zool. Soc. London xv; *A. mirabilis*, pl. 1, fig. 4, p. 11, DIXEY, P. Zool. Soc. London 1900.  
*A. quirinalis, subserena*, p. 544, *pomponia, pelagus*, p. 545, *toruna*, p. 546, Africa, GROSE-SMITH, Nov. Zool. vii, n. spp.  
*Heliconius*; rearrangement of, with many varr. n. and the following n. spp.; *H. paraensis*, p. 197, *batesi*, p. 207, S. America, RIFFARTH, Berlin. ent. Zeitschr. xlv; *H. tithoreides*, Peru, STAUDINGER, p. 404, pl. vii, fig. 13, Deutsche ent. Zeitschr. Lep. xii, n. form or n. sp.  
*Planema alicia*, p. 546, *paragea*, p. 547, Uganda, GROSE-SMITH, Nov. Zool. vii, n. spp.

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- Acidalia hyperbius*, pl. 373, fig. 1, *castetsi*, fig. 2, pp. 230–236, MOORE, Lep. ind. iv.  
*A. taprobana*, Ceylon, id. p. 237, t. c. n. sp.  
*Agrias sardanapalus* var. n. *hades*, LATHY, p. 29, Ent. Mag. xxxvi.  
*Amnosia*; key to species, LATHY, p. 196, t. c.



- Apatura bolina*, figures, larva and pupa, pls. 329–331, pp. 137–144, *mississippi*, pl. 332, pp. 144–150, MOORE, Lep. ind. iv.
- Argynnis*: nervuration of *Argynnis* and allies, GROTE, p. 7, Canad. Ent. xxxii; notes on N. American, with list, SYNDER, p. 38, Mem. Soc. Chicago i; *A. jainadeva*, pl. 374, fig. 1, *vitatha*, fig. 2, MOORE, pp. 238, 239, Lep. ind. iv; *A. paphia* ♀ var., pl. iii, fig. 3, FROHAWK, Entomologist xxxiii; *A. aglaia* varr., STICHEL, pp. 132–137, Berlin. ent. Zeitschr. xlv; *A. selene* var. n. *flavopunctata*, STRAND, Arch. Naturv. Christian. xxii, No. 5, p. 20 and p. 226, Ent. Nachr. xxvi; *A. selene* var., p. 242, pl. xiv, figg. 8, 9; *A. aglaia* varr., p. 245, figg. 10, 11, TER HAAR, Tijdschr. Ent. xliii; *A. pales* varr., GALVAGNI, Verh. Ges. Wien I, pp. 565–567, cuts; *A. nitocris* var. n. *nicrocærulea*, WILMATTE & COCKERELL, p. 622, Ent. News Philad. xi; *A. nitocris* var. n. *cærulescens*, HOLLAND, p. 332, t. c.; *A. nitocris cærulescens*, note, SKINNER, p. 483, t. c.; *A. cærulescens* a valid species, SMITH, p. 449, t. c.
- Atella phalantha*, pl. 360, p. 197, MOORE, Lep. ind. iv.
- A. alceippoides*, pl. 361, fig. 2, p. 199, *fraterna*, fig. 2, p. 201, India, MOORE, t. c. n. spp.
- Bassarona affinis*, Siam, LATHY, p. 214, Entomologist xxxiii, n. sp.
- Boloria* n. g. for part of *Argynnis*, p. 244, *B. sipora*, pl. 375, *generator*, pl. 376, fig. 1, *hegemon*, fig. 2, *jerdoni*, fig. 4, *gemmata*, pl. 377, fig. 1, *altissima*, fig. 2, *mackinnonii*, fig. 3, *clara*, pl. 378, MOORE, Lep. ind. iv.
- B. chitralensis*, Kashmir, id. t. c. p. 249, pl. 376, fig. 3, n. sp.
- Brenthis pales* var. n. *alaskensis*, HOLLAND, p. 383, Ent. News Philad. xi.
- B. youngi*, Alaska, id. l. c., n. sp.
- Cethosia*; characters of the species with varr. n., FRUHSTORFER, Ent. Zeit. Stettin lxi, pp. 364–381; *C. cyane*, pl. 177, *nicobarica*, pl. 349, *mahratta* with larva and pupa, pl. 350, *nietneri* with larva and pupa, pl. 351, *biblis*, pls. 352, 353, pp. 176–187, MOORE, Lep. ind. iv.
- C. buruana*, Buru, HOLLAND, p. 63, Nov. Zool. vii, n. sp.
- Charaxes*: monograph, 103 species; numerous new subsp. described, ROTHSCHILD & JORDAN, t. c.; *C. ansorgei* ♀, BUTLER, p. 915, P. Zool. Soc. London 1900; *C. candiope* larva, pupa, p. 296, pl. xlv, figg. 16, 17, FAWCETT, Tr. Zool. Soc. London 1900.
- C. penricei*, Angola, ROTHSCHILD, p. 460, Nov. Zool. vii; *C. andrewsi*, Christmas Is., BUTLER, p. 61, pl. ix, fig. 8, Monogr. Christmas Island: n. spp.
- Chlorippe*: problematic females, STICHEL, Berlin. ent. Zeitschr. xlv, p. 40; *C. racuna* varr., pp. 146–148, gynandromorph, pl. ii, fig. 1, STICHEL, t. c.
- Cirrochroa aoris*, pl. 364, *abnormis*, pl. 365, fig. 1, *olivacea*, fig. 2, *mithila*, pl. 366, *anjira*, pl. 367, fig. 1, *surya*, fig. 2, *thais*, pl. 368, *lanka*, pl. 369, *nicobarica*, pl. 370, pp. 211–223, MOORE, Lep. ind. iv; *C. aoris*, gynandromorph, pl. dd, figg. 12, 13, p. 168, NICEVILLE, J. Bombay Soc. xiii.
- Cynthia erota*, pls. 354, 355, *saloma* with larva and pupa, pls. 356, 357, *asela* with larva and pupa, pl. 358, pp. 187–194, MOORE, Lep. ind. iv; *C. arsinoë*, list of varr., FRUHSTORFER, Berlin. ent. Zeitschr. xlv, pp. 27, 28.
- Cupha erymanthis*, pl. 362, fig. 1, *maja* with larva and pupa, fig. 2, *placida*, pl. 363, fig. 1, MOORE, Lep. ind. iv.
- C. andamanica*, South Andamans, id. p. 208, pl. 363, fig. 2, t. c. n. sp.
- Cymothoe aurivillii*, figured, pl. v, figg. 5 and 8, Deutsche ent. Zeitschr. Lep. xii.
- Cyrestis aza*, Siam, STRECKER, p. 24, Suppl. iii, n. sp.
- Cystineura floridana*, Florida, id. l. c. n. sp.

- Doleschallia indica*, pl. 336, larva and pupa, fig. 2, *andamanica* n. n. for *polibete* Nicév. nec Cr., pl. 335, pp. 154-158, MOORE, Lep. ind. iv.  
*D. borneensis*, Borneo, id. p. 158, t. c. n. sp.  
*Dryas kamala*, pl. 371, fig. 1, *rudra*, fig. 2, *childreni*, pl. 372, fig. 1, *sakontula*, fig. 2, pp. 223-230, MOORE, t. c.  
*Ducapa* n. n. for *Paduca* Moore, p. 209, *D. fasciata*, pl. 363, fig. 3, *flavobrunnea*, fig. 4, MOORE, t. c.  
*Eugonia j-album*, larva, variation of pupa, DURAND, p. 87, Psyche ix.  
*Eulepis eudamippus whiteheadi*, Hainan, CROWLEY, p. 506, P. Zool. Soc. London 1900, n. sp.  
*Euralia* (*Diadema*) *grandidieri*, Madagascar, MABILLE, p. 374, Bull. Mus. Paris 1899, n. sp.  
*Euthalia theili* ♀, pl. i, fig. 5, p. 89, PAGENSTECHER, Zoologica xxvii.  
*Euripus halitherses* varr., FRUHSTORFER, Berlin. ent. Zeitschr. xlv, SB. pp. 22, 23.  
*Euvanesa antiopa*, larva in N. America, WEED (1391).  
*Grapta j-album*, larva, FLETCHER, p. 273, Canad. Ent. xxxii.  
*Hestina namoides*, W. China, NICÉVILLE, p. 166, pl. DD, fig. 10, J. Bombay Soc. xiii, n. sp.  
*Hypolimnas nerina* var. *listeri*, variation, BUTLER, Monogr. Christmas Island p. 62; *H. lasinassa*, characters, HOLLAND, p. 65, Nov. Zool. vii; *H. misippus* at sea, POULTON, p. 80, Ent. Rec. xii.  
*Issoria sinha*, pl. 359, fig. 2, p. 202, MOORE, Lep. ind. iv.  
*Junonia cebrense*, pupa, p. 295, pl. xlv, fig. 13, *clelia*, larva and pupa, fig. 14, FAWCETT, Tr. Zool. Soc. London xv; *J. alleni* n. n. for *ocyale* Hb., *hubneri* n. n. for *Hamadryas decora evarete* ♂ Hübn., *oriana* n. n. for *evarete* ♀ Hübn., KIRBY, Hubner n. ed. p. 24; *J. ænone hierta* to be called *litingensis* Osbeck, Fox, p. 718, Science xii.  
*Kirontisa whiteheadi*, Hainan, CROWLEY, p. 506, pl. xxxv, fig. 4, P. Zool. Soc. London 1900, n. sp.  
*Kallima hugelii*, pl. 337, *buckleyi*, pls. 338, 339, *inachus*, pls. 340, 341, *limborgii*, pl. 342, *phylarchus*, pls. 343, 344, *horsfieldii* with larva and pupa, pls. 345, 346, *knyvetti*, pl. 347, fig. 1, *albofasciata*, fig. 2, pp. 162-175, MOORE, Lep. ind. iv.  
*Melitæa didyma* var. *uranica*, *M. asteroida* var. *maculata*, STAUDINGER, p. 335, Deutsche ent. Zeitschr. Lep. xii; *M. didyma* var. n. *polaris*, GRUM-GRSHIMAILO, p. 459, Annuaire Mus. St. Petersb. iv; *M. chalcodon* varr. n. *fusimacula*, *mariana*, BARNES, p. 42, Canad. Ent. xxxii; *M. didyma* varr., STICHEL, pp. 128-131, Berlin. ent. Zeitschr. xlv; *M. didyma*, *parthenie* varr., OBERTHUR, p. 276, Bull. Soc. ent. France 1900, pl. i; *M. helvia* redescribed, HOLLAND, p. 385, Ent. News Philad. xi.  
*M. approximata*, Texas, STRECKER, p. 23, Suppl. iii; *M. senrabbii*, Texas, BARNES, p. 43, Canad. Ent. xxxii : n. spp.  
*Myscelia hypatia*, Amazons, STRECKER, p. 24, Suppl. iii, n. sp.  
*Neptis prastini* and *nemeus*, synonymy, RIBBE, p. 408, Deutsche ent. Zeitschr. Lep. xii; *N. venilia novohannoverana*, PAGENSTECHER, p. 82, Zoologica xxvii; *N. seeldrayersi* ♀, AURIVILLIUS, p. 1042, Ofv. Ak. Forh. lvii.  
*N. heliopolis* ♂, figg. 1, 2, ♀, fig. 3, GROSE-SMITH, Rhop. exot. Nymph. Neptis iv; *N. mortifacies*, figg. 1, 2, *cyanifera*, figg. 3, 4, *astræa*, figg. 5, 6, id. t. c. Neptis v.  
*N. polion*, Bouru, id. t. c. Neptis iv, p. 14, figg. 4-6; *N. neriphoides*, Buru, HOLLAND, p. 66, Nov. Zool. vii; *N. nerio*, Buru, NICÉVILLE, p. 167, pl. DD, fig. 11, J. Bombay Soc. xiii : n. spp.  
*Penthema mimetica*, Siam, LATHY, p. 213, Entomologist xxxiii, n. sp.  
*P. lisarda*, pl. 333, *darlisa*, p. 334, *binghami*, pl. 335, pp. 150-154, MOORE, Lep. ind. iv.

- Phædyma ampliata* ♂, pl. i, fig. 6, p. 86, PAGENSTECHER, Zoologica xxvii.  
*Phyciodes ithra* [said to be new name] for *Acca hera* Hübn. nec Cr., KIRBY in Hubner new ed. p. 18.  
*Precis simia* var., BUTLER, p. 59, Ann. Nat. Hist. v; *P. sesamus*, pl. lviii, fig. 1, p. 916, BUTLER, P. Zool. Soc. London 1900.  
*Pseudonica* n. n. for *Nica* Hb., KIRBY, p. 28, Hubner new ed.  
*Pyrameis atalanta* varr., with *italica* subsp. n., STICHEL, pp. 124–128, Berlin. ent. Zeitschr. xlv; *P. cardui* var. n. *minor*, CANNAVIELLO, p. 19, Miscell. ent. viii; *P. huntera* var. n. *fulvia*, DODGE, p. 92, Canad. Ent. xxxii.  
*Rathora* n. g. for the *A. lathonia* group of *Argynnis*, MOORE, p. 241, *R. issaca*, pl. 375, fig. 1, Lep. ind. iv.  
*Terinos maddalena* ♀, pl. ii, fig. 4, p. 66, PAGENSTECHER, Zoologica xxvii; *T. clarissa*, pl. 359, fig. 1, p. 194, MOORE, Lep. ind. iv.  
*T. falcipennis*, Siam, LATHY, p. 213, Entomologist xxxiii, n. sp.  
*Vanessa urticae*, *atalanta* varr., pl. iii, FROHAWK, p. 101, t. c.; *V. cardui* var., GOUIN, p. 93, pl. iv, fig., Act. Soc. Bordeaux v; *V.*: temperature experiments, FISCHER (420, 421); *V. gonerilla*, life-history, QUAIL, p. 153, Ent. Mag. xxxvi; *V. antiopa*, ovipositing, WEEKS (1392).

## MORPHIDÆ.

- Amathusia kuhni*, Celebes, p. 201, *staudingeri*, Borneo, p. 202, RÖBER, Ent. Nachr. xxvi, n. spp.  
*Clerome sulana*, description and figure, p. 165, pl. DD, fig. 9, NICÉVILLE, J. Bombay Soc. xiii.  
*Nandoges hainana*, Hainan, CROWLEY, p. 505, P. Zool. Soc. London 1900, n. sp.  
*Stichophthalma camadeva* var. n. *nicévillei*, RÖBER, p. 203, Ent. Nachr. xxvi; *S. suffusa* var., SUFFERT, Berlin. ent. Zeitschr. xlv, SB., p. 2.

## SATYRIDÆ.

- Acroptalmia chionides*, Sula-Mangoli, NICÉVILLE, p. 163, pl. DD, fig. 7, J. Bombay Soc. xiii, n. sp.  
*Cænonympha*: the N. American, SKINNER, pp. 299–309, pl. vii, Tr. Amer. ent. Soc. xxvi; *C. tiphon* var. n. *rhodopensis*, ELWES, p. 205, Tr. ent. Soc. London 1900; *C. kodiak* var. n. *yukonensis*, HOLLAND, p. 386, Ent. News Philad. xi; *C. iphis*, egg and oviposition, GILLMER, p. 351, Illustr. Zeitschr. Ent. v, of *C. tiphon* id., t. c., p. 384.  
*Epinephele janira* var. *fulvocincta*, FUCHS, p. 37, Jahrb. Nassau Ver. liii; *E. haberhaueri* var. n. *rubriceps*, *E. hilaris* var. n. *bori*, HERZ, p. 446, Annuaire Mus. St. Petersb. v.  
*Erebia epiphron* var. n. *orientalis*, p. 199, *oeme* var. p. 200, *melas* var. p. 201, *tyndarus* var. *gorgone* var. n. *rhodopensis*, p. 202, ELWES, Tr. ent. Soc. London 1900; *E. fasciata* var. n. *semo*, GRUM-GRSHIMAILO, p. 460, Annuaire Mus. St. Petersb. iv; *E. tyndarus* var., GALVAGNI, p. 568, Verh. Ges. Wien I; *E. sofia* var. n. *alaskensis*, p. 387, HOLLAND, Ent. News Philad. xi; *E. glacialis*, note on, ROWLAND-BROWN, p. xvi, P. ent. Soc. London 1900; *E. cassiope* etc., larvæ, WULLSCHLEGEL, pp. 287, 288, Mt. Schweiz. ent. Ges. x.  
*E. youngi*, Alaska, HOLLAND, p. 388, Ent. News Philad. xi, n. sp.  
*Lethe sura*, gynandromorph, NICÉVILLE, p. 163, pl. CC, figg. 5, 6, J. Bombay Soc. xiii.

- Melanitis leda bouruana* subsp. n., HOLLAND, p. 61, Nov. Zool. vii.  
*Mycalesis lamani*, Congo, AURIVILLIUS, p. 1040, Ofv. Ak. Forh. lvii;  
*M. valeria*, New Guinea, GROSE-SMITH, p. 88, Nov. Zool. vii : n. spp.  
*Oeneis jutta* var. n. *alaskensis*, HOLLAND, p. 389, Ent. News Philad. xi;  
*O. elsa* ♀, AUSTAUT, *Oe. verdanda* var. *vanda*, p. 48, Naturaliste xxii.  
*Oxeoschistus cothonides*, fig. 3, GROSE-SMITH, Rhop. exot. *Oxeoschistus* i.  
*O. phalsi*, *chyprota*, figg. 4, 5, *erebus*, fig. 6, S. America, GROSE-SMITH, Rhop. exot. Satyr. Pedaliodes iv and *Oxeoschistus* i, n. spp.  
*Pararge mæra* var., FUCHS, p. 35, Jahrb. Nassau. Ver. liii.  
*Pedaliodes palades* figg. 8, 9, *P. palæopolis* synonymy, GROSE-SMITH, Rhop. exot. iii, Pedaliodes v, p. 20.  
*P. plotinella*, p. 15, figg. 3, 4, *hopfferi*, figg. 5, 6, *phazania*, p. 16, fig. 7, *polemon*, p. 16, fig. 8, S. America, GROSE-SMITH, Rhop. exot. Pedal. iv; *P. phrasina*, fig. 1, *phrasiclea*, fig. 2, *phrasis*, fig. 3, *petronius*, figg. 4, 5, *plautius*, fig. 6, S. America, GROSE-SMITH, Rhop. exot. iii, Satyridæ Pedaliodes v, pp. 17–19 : n. spp.  
*Pronophila mena*, Bolivia, fig. 1, *sagartia*, Colombia, fig. 2, GROSE-SMITH, Rhop. exot. Satyr. Pronoph. i, n. sp.  
*Satyrus*; varr. from Thian Schan, STAUDINGER, p. 336, Deutsche ent. Zeitschr. Lep. xii.  
*Xenica tasmanica*, Tasmania, LYELL, p. 110, pl., Victorian Natural. xvii, n. sp.  
*Zethera musa* = (*mixta* Fruhst.) description and figure, p. 162, pl. cc, fig. 4, NICÉVILLE, J. Bombay Soc. xiii.

## LIBYTHEIDÆ, ELYMNIIDÆ, LEMONIIDÆ.

- Elymnias saueri* ♀, description and figure, NICÉVILLE, p. 164, pl. dd, fig. 8, J. Bombay Soc. xiii.  
*Libythea geoffroyi* ♂, pl. ii, fig. 8, p. 102, PAGENSTECHE, Zoologica xxvii;  
*L. celtis*, pupa, CHAPMAN, pp. 284–286, Ent. Rec. xii.  
*Limonia* (sic) *bolena* = (*Adelotypa xanthobrunnea* Warr.), WARREN, p. 225, Nov. Zool. vii.

## LYCÆNIDÆ.

- The Androconia of numerous *Lycæna* (110 spp.) described and figured and phylogeny discussed, KÖHLER (743).  
*Argiolaus crawshayi*, Kikuya, BUTLER, p. 926, pl. lviii, fig. 3, P. Zool. Soc. London 1900, n. sp.  
*Arrhopala comica*, Burma, NICÉVILLE, p. 170, pl. ee, fig. 18, J. Bombay Soc. xiii; *A. carolina*, *buruensis*, Buru, HOLLAND, p. 78, Nov. Zool. vii : n. spp.  
*Alcides thyra* var. (*simplex* on plate) figg. 3, 4, *mars*, figg. 5, 6, *taikosama*, figg. 7–9, GROSE-SMITH, Rhop. exot. iii, Lycænidae (African) pl. xxvi, pp. 121–123.  
*A. zilka*, S. Africa, figg. 1, 2, GROSE-SMITH, Rhop. exot. iii, Lycænidae (African) pl. xxvi, p. 121, n. sp.  
*Amblypodia hainana*, Hainan, CROWLEY, p. 508, P. Zool. Soc. London 1900, n. sp.  
*Aziocerses mendeche*, figg. 12–14, *punicea*, figg. 15–17, GROSE-SMITH, Rhop. exot. iii, Lycænidae (African), pl. xxvi, pp. 124, 125.



- A. bambana*, E. Africa, GROSE-SMITH, Rhop. exot. iii, Lycænidae (African), pl. xxvi, figg. 10, 11, p. 123, n. sp.
- Catochrysops* cf. *Euchrysops*.
- Chilades*; *Zizera unigemmata* referred to this, BUTLER, p. 111, P. Zool. Soc. London 1900.
- Chliaria xenia*, figg. 8–10, GROSE-SMITH, Rhop. exot. Lyc. Or. xxiii.
- Cupido* and *Lycæna*, distinctions, components, BUTLER, p. 124, Entomologist xxxiii.
- C. soalaticus*, Madagascar, KARSCH, p. 369, Ent. Nachr. xxvi, n. sp.
- Cyaniris*; list of species, BUTLER, Ann. Nat. Hist. v, pp. 441–451; *C. ladon* Cr. = (*pseudargiolus* Boisd.), BUTLER, p. 91, Canad. Ent. xxxii; *C. ladon*, not to be used, ELWES, p. 116, t. c.
- C. timorensis*, Timor, p. 443, *splendens*, Perak, *imperatrix*, Siam, p. 444, BUTLER, Ann. Nat. Hist. v, n. spp.
- Cyclyrius sharpia*, E. Africa, BUTLER, p. 929, pl. lviii, figg. 4, 5, P. Zool. Soc. London 1900, n. sp.
- Deudorix dieden* Madagascar, KARSCH, p. 369, Ent. Nachr. xxvi, n. sp.
- Epamera arborifera*, East Africa, BUTLER, p. 927, pl. lviii, fig. 2, P. Zool. Soc. London 1900, n. sp.
- Euchrysops* n. g. for pt. of *Catochrysops* type *cnejus*, BUTLER, p. 1, Entomologist xxxiii.
- Gerydus buruensis*, Buru, HOLLAND, p. 67, Nov. Zool. vii, n. sp.
- Hypochlorosis buruana*, Buru, HOLLAND, p. 79, t. c. n. sp.
- Hypochrysops alix* figg. 1, 2, *rufinus*, figg. 3, 4, *cleon*, figg. 5, 6, *cleonides*, figg. 7, 8, GROSE-SMITH, Rhop. exot. iii, Lycænidae (oriental), pl. xxiv; *H. mirabilis*, pl. ii, fig. 2 ♂, fig. 3 ♀, pp. 106 & 262, PAGENSTECHER, Zoologica xxvii.
- H. alix*, *cleon*, p. 88, *cleonides*, p. 89, New Guinea, GROSE-SMITH, Nov. Zool. vii, n. spp.
- Hypolycaena alcestitis*, figg. 1–3, GROSE-SMITH, Rhop. exot. Lyc. Or. xxiii.
- H. margites*, Madagascar, MABILLE, p. 375, Bull. Mus. Paris 1899, n. sp.
- Jamides grata*, figg. 1–3, *seminiger*, figg. 4–6, *timon*, figg. 7–9, *purpurata*, figg. 10–12, GROSE-SMITH, Rhop. exot. Lycæn. Or. xxii, Jamides i.
- J. carola*, Solomon Islands, p. 13, figg. 13, 14, *tamborana*, Tambora, p. 14, fig. 15, GROSE-SMITH, t. c.; *J. porphyris*, Buru, HOLLAND, p. 75, Nov. Zool. vii, n. spp.
- Jolaus aurivillii* n. n. for *sapphirinus* Aur. nec Rüb., RÖBER, p. 204, Ent. Nachr. xxvi.
- Lampides buruana*, Buru, HOLLAND, p. 76, Nov. Zool. vii, n. sp.
- Lycæna arion* varr., FROHAWK, pl. iii, figg. 6, 7, Entomologist xxxiii; *L. corydon* var. n. *fowleri*, SOUTH, p. 104, pl. iii, figg. 4, 5, Entomologist xxxiii; BELLAMY, t. c., p. 157; *L. alcedo* var. n. *noah*, HERZ, p. 442, Annuaire Mus. St. Petersb. v; *L. icarus* varieties, FUCHS, pp. 31–35, Jahrb. Nassau. Ver. liii; *L. bellargus* var. n. *krodeli*, *L. corydon* var. *cinnus*, GILLMER, pp. 50–52, pl., Illustr. Zeitschr. Ent. v; *L. argyrognomon*, arctic var., STRAND, p. 226, Ent. Nachr. xxvi; *L. pheretes* var. n. *sikkima*, BATH, p. 199, Entomologist xxxiii; *L. pheretes*; *sikkima* and *altissima* are varr., ELWES, p. 223, Entomologist xxxiii; *L. jolas*, natural history, AIGNER-ABAFI, Illustr. Zeitschr. Ent. v, p. 225; *L. corydon*, egg and oviposition, GILLMER, Illustr. Zeitschr. Ent. v.
- L. sitalces*, Madagascar, MABILLE, p. 723, Ann. Soc. ent. France lxviii; *L. donina*, Java and Celebes, SNELLEN, p. 262, Tijdschr. Ent. xliii; *L. elaborata*, Queensland, LUCAS, p. 137, P. Soc. Queensland xv; *L. mela*, Colorado to Colombia, STRECKER, p. 20, Suppl. iii; *L. yukona*, Alaska, HOLLAND, p. 416, Ent. News Philad. xi : n. spp.

- Lycænesthes pegobates*, Buru, HOLLAND, p. 71, Nov. Zool. vii, n. sp.  
*Nacaduba cladara*, p. 73, *pæcilla*, p. 74, *glenis*, p. 75, Buru, HOLLAND, p. 75, t. c. n. spp.  
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*Zeritis thysbe*, variation, FELTHAM, P. ent. Soc. London 1900, pp. xix-xxii.  
*Zizera*; revision with figures of 10 species, synonymy, etc., BUTLER, pp. 104-111, pl. xi, P. Zool. Soc. London 1900.  
*Z. subcærulea*, Buru, HOLLAND, p. 69, Nov. Zool. vii, n. sp.

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- Doberus mexicanus*, cocoon described, BARRETT, p. 234, Canad. Ent. xxxii.
- Eagris plicata*, E. Africa, BUTLER, p. 941, pl. lviii, figg. 8, 9, P. Zool. Soc. London 1900, n. sp.
- Eudamus biolleyi*, Costa Rica, MABILLE, p. 230, Bull. Soc. ent. France 1900, n. sp.
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- Pamphilinae*: the subfam. discussed, GODMAN, pp. 461–463, Biol. Centr.-Amer. Rhopal. ii. In the following pages of the work many American species are referred to other genera than those in which they have hitherto been placed. For complete information on this point reference must be made to the work. For synonymy a similar course must be pursued as the work does not indicate what is new and what merely repetitive.
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- Tagiades multipunctatus*, Hainan, CROWLEY, p. 510, P. Zool. Soc. London 1900, n. sp.
- Telicota mingo*, habitat queried, HOLLAND, p. 85, Nov. Zool. vii.
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- Zenis* n. g., type *Hesperia minos* Latr., GODMAN, p. 585, t. c.

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Earth cocoons formed by exudation not spinning, SOULE (1256).

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*Aegiale streckeri*, habits, OSLAR, pp. 495-498, Ent. News Philad. xi.

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[Cf. AURIVILLIUS (45), DYAR (354), FAWCETT (406), HAMPSON (545), HOLLAND (595), KARSCH (680), NICÉVILLE (942), PAGENSTECHER (975), PETERSEN (993), ROTHSCHILD (1136).]

*Acherontia atropos*, natural history, voice-organ (in Hungarian), AIGNER (13).

*Amphonyx antæus*, early stages, DYAR, p. 256, P. U. S. Mus. xxiii.

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*Cephonodes hylas*, larva, pupa, pl. xlviii, figg. 13-19, p. 312, FAWCETT, Tr. Zool. Soc. London xv.

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- C. undulata*, Congo, AURIVILLIUS, p. 1050, Ofv. Ak. Forh. lvii; *C. hyporhoda*, India, HAMPSON, p. 39, pl. B, fig. 12, J. Bombay Soc. xiii; *C. kuhni*, Dammer Island, pl. v, fig. 2, *lunata*, Khasia hills, ROTHSCCHILD, p. 274, Nov. Zool. vii : n. spp.
- Daphnis dohertyi*, description, p. 242, cut, p. 243, PAGENSTECHER, Zoologica xxix.
- Hemaris tenuis* and *diffinis*, one species, larvæ, SMYTH, pp. 584–589, Ent. News Philad. xi.
- Lophostethus dumolinii*, larva, pupa, pl. xlvi, figg. 7, 8, p. 307, FAWCETT, Tr. Zool. Soc. London xv.
- Macroglossa glaucoplaga*, Sikkim, HAMPSON, p. 40, pl. B, fig. 13, J. Bombay Soc. xiii; *M. buruensis*, Buru, HOLLAND, p. 556, Nov. Zool. vii; *M. belinda*, Bismarck Arch., PAGENSTECHER, Zoologica xxix, p. 19 : n. spp.
- Oenetus mirabilis* ♀, W. ROTHSCCHILD, p. 24, Nov. Zool. vii.
- Protoparce mauritii*, larva, pupa, pl. xlvi, figg. 9–12, p. 311, FAWCETT, Tr. Zool. Soc. London xv; *P. rustica*, larva, SMYTH, p. 485, pls. x, xi, Ent. News Philad. xi.
- P. triangulifera*, Buru, HOLLAND, p. 556, Nov. Zool. vii, n. sp.
- Pseudosmerinthus semnus*, Madagascar, KARSCH, p. 370, Ent. Nachr. xxvi, n. sp.
- Sataspes haurxwellii*, Burma, NICÉVILLE, p. 173, pl. EE, fig. 22, J. Bombay Soc. xiii, n. sp.
- Sphinx convolvuli* var. *nigricans*, CANNAVIELLO, p. 295, Bull. Soc. ent. Ital. xxxii; *S. drupiferarum*, larva, FERNALD, p. 581, pl. xvi, Ent. News Philad. xi.

### ÆGERIIDÆ (or SESIIDÆ).

[Cf. BEUTENMÜLLER (115–117), DYAR (360), HAMPSON (545), NICÉVILLE (942), PAGENSTECHER (975), PIEPERS & SNELLEN (1038).]

Summary of food-habits of larvæ of N. American *Sesiidæ*, BEUTENMÜLLER (117).

*Aegeria chrysophanes*, early stages, ILLIDGE, p. 136, P. Soc. Queensland xv.

*Ichneumonoptera cerulipes*, Sikkim, HAMPSON, p. 43, J. Bombay Soc. xiii, n. sp.

*Lepidopoda* n. g. for *L. heterogyna* n. sp., India, HAMPSON, p. 44, t. c.

*Melitita binghamii*, Burma, NICÉVILLE, p. 174, pl. EE, fig. 24, t. c.; *M. ambigua*, Java, SNELLEN, p. 36, Tijdschr. Ent. xliii : n. spp.

*Paranthrene ruficollaris*, Bismarck Arch., PAGENSTECHER, p. 21, pl. iv, fig. 26, Zoologica xxix, n. sp.

*Sanninoidea græfi* var. *n. barnesii*, BEUTENMÜLLER, p. 254, J. N. York Ent. Soc. viii.

*Sciapteron trizonata*, Sikkim, HAMPSON, p. 43, J. Bombay Soc. xiii, n. sp.

*Sesia bombyliiformis*, egg and young larva, JEFFREY, p. 10, Ent. Mag. xxxvi.

*S. uniformis*, Java, SNELLEN, p. 34, Tijdschr. Ent. xliii; *S. rubripes*, Bismarck Arch., PAGENSTECHER, p. 22, Zoologica, xxix; *S. arctica* [described, p. 208, named p. 377] Alaska, BEUTENMÜLLER, Canad. Ent. xxxii and *S. arctica*, Alaska, BEUTENMÜLLER, p. 499, P. Washington Ac. ii; *S. mariona*, Colorado, BEUTENMÜLLER, p. 254, J. N. York Ent. Soc. viii : n. spp.

*Trichoceroa univitta*, Sikkim, HAMPSON, p. 44, J. Bombay Soc. xiii, n. sp.

## BOMBYCES.

[*(s. l., including AGARISTIDÆ, CHALCOSIIDÆ, URANIIDÆ, SARROTHRIPINAE etc.). (For EPIPLEMIDÆ see GEOMETRIDÆ.)*]

[Cf. AURIVILLIUS (45), BARNES (71), CHAPMAN (237, 241), DISTANT (331), DOGNIN (340, 341), DRUCE (348, 349, 983), DUDGEON (352), DUPONT (353), DYAR (354, 356, 357, 358, 361, 362), FABRE (385, 386), FAWCETT (406), FUCHS (473), GRUM-GRSHIMAILO (541), HAMPSON (544, 545, 547, 548), HEYLAERTS (586), HOLLAND (595), JOANNIS (662), KARSCH (673, 676, 678, 679), LAMPA (796), LOWER (828, 829), LUCAS (832), MABILLE (843), MAYER (872, 873), PAGENSTECHER (975), PETERSEN (993), PIEPERS & SNELLEN (1038), POUJADE (1051), PÜNGELER (1060), QUAIL (1061, 1064), REBEL (1072, 1075), ROTHSCCHILD (1136), SCHAUS (1151), SONTTHONNAX (1254), STAUDINGER (1268, 1269, 1270), STRECKER (1289), SWINHÖE (1299), TUTT (1340-1342), VAYSSIÈRE & BORDAS (1353), WARREN (1375, 1376).]

Descriptive catalogue of *Noliniæ* and *Lithosiinæ*, HAMPSON (544). We refer to this work below as Cat. Lep. Phal. ii: the new genera and species and some of the figures are recorded, but not the synonymy.

The number of species is 162 *Noliniæ*, 1037 *Lithosiinæ*.

The classification, families, phylogeny of *Psychides* and *Lachneides* (1340).

Case-making of *Psychidæ*, assembling of *Bombycidæ*, FABRE (386).

Larval cases of *Lacosomidæ* (*Perophoridæ*), DYAR (358).

*Acanthopsyche opacella*, habits, cases, development, CHAPMAN, Tr. ent. Soc. 1900, pp. 403-410, pl. viii.

*A. carbonarius*, W. Africa, KARSCH, p. 1, Ent. Nachr. xxvi; *A. (Æcetioides) minima*, Ceylon, HAMPSON, p. 227, J. Bombay Soc. xiii: n. spp.

*Achroösia* n. g. *Lithosiinæ*, p. 337, for *A. nuda* n. sp., Brazil, p. 338, HAMPSON, Cat. Lep. Phal. ii.

*Actias mimosæ*, larva, cocoon, pl. xlvii, figg. 1-3, p. 302, FAWCETT, Tr. Zool. Soc. London xv.

*Adelocephala pamala*, p. 226, *totoma*, p. 227, Parana, SCHAUS, J. N. York Ent. Soc. viii, n. spp.

*Adoxosia* n. g. *Lithosiinæ*, p. 397, for *A. excisa* n. sp., Brazil, p. 398, HAMPSON, Cat. Lep. Phal. ii.

*Adrocampa* ? *insulsa*, Ecuador, DOGNIN, p. 437, Ann. Soc. ent. Belgique xlv, n. sp.

*Æolosia* n. g. *Lithosiinæ*, p. 404, for *Æ. multipunctata* n. sp., Birma, p. 405, HAMPSON, Cat. Lep. Phal. ii.

*Æthosia* n. g. *Lithosiinæ* for *Æ. ectrocta* n. sp., Haiti, HAMPSON, p. 385, t. c.

*Agkonis miranda*, Bolivia, HAMPSON, p. 187, t. c. n. sp.

*Aglossosia* n. g. for *A. flavimarginata* n. sp., Natal, HAMPSON, p. 247, t. c.

*Agylla tumidicosta*, Guatemala, p. 199, *barbicosta*, Brazil, p. 200, *rotunda*, Colombia, p. 201, *involuta*, Brazil, p. 203, *dognini*, p. 205, *strigula*, pl. xxiv, fig. 3, p. 207, Bolivia, *dentifera*, Ecuador, pl. xxiii, fig. 9, p. 208, HAMPSON, t. c. n. spp.

*Altha castaneipars*, larva, p. 88, pl. ii, fig. 8, PIEPERS, Tijdschr. Ent. xliii.

*A. obliquifusca*, Madras, HAMPSON, p. 232, pl. B, fig. 11, J. Bombay Soc. xiii, n. sp.

*Amazia theon*, Venezuela, DRUCE, p. 66, Ann. Nat. Hist. vi, n. sp.

*Apaidia* n. g. type *Callimorpha mesogona* Godt., HAMPSON, p. 467, Cat. Lep. Phal. ii.

*Apatelodes palma*, p. 510, *lapitha*, p. 511, Colombia, DRUCE, Ann. Nat. Hist. v, n. spp.



- Arbela watsoni*, Madras, HAMPSON, p. 228, J. Bombay Soc. xiii; *A. salara*, Colombia, DRUCE, p. 513, Ann. Nat. Hist. v : n. spp.
- Arctia*, characters of the N. American species and their larvæ, DYAR (357); *A. caja* ♂ var., FROHAWK, pl. iii, fig. 9, p. 103, Entomologist xxxiii; *A. hebe* var. n. *collaris*, *A. latreillei* var. n. *chinensis*, GRUM-GRSHIMAILO, Annuaire Mus. St. Petersb. iv; *A. phalerata*, life-history, GIBSON, pp. 369–376, Canad. Ent. xxxii.
- A. serarum*, Mongolia, GRUM-GRSHIMAILO, p. 463, Annuaire Mus. St. Petersb. iv, n. sp.
- Ariola continua* Walk., pl. ii, fig. 11, *deflexa* Walk., fig. 10, figures, SWINHOE, Cat. Lep. Het. ii.
- Artaxa arrogans*, Queensland, LUCAS, p. 140, P. Soc. Queensland xv, n. sp.
- Artona albicilia*, *flavipuncta*, pl. B, fig. 22, India, HAMPSON, p. 225, J. Bombay Soc. xiii, n. spp.
- Asinduma exscripta* Walk., pl. ii, fig. 15, figure, SWINHOE, Cat. Lep. Het. ii.
- Asura hemixantha*, Tenimber, pl. xxx, fig. 5, p. 426, *synestramena*, fig. 2, Borneo, *phaeobasis*, Louisiade group, fig. 3, *flavia*, N. Guinea, fig. 7, p. 429, *umbrifera*, Tibet, fig. 14, p. 431, *phaeoplagia*, fig. 4, p. 433, *perihemia*, fig. 6, Java; *ecmelæna*, Sangir, fig. 24, p. 438, *fulvia*, Natal, fig. 25, p. 439, *agraphia*, Java, fig. 30, p. 443, *nigriciliata*, Sangir, fig. 19, p. 445, *crocota*, N. Guinea, pl. xxxi, fig. 5, *fulguritis*, Pulo Laut, fig. 6, *birivula*, fig. 30, p. 450, *asaphes*, fig. 31, Borneo, *ectophaca*, N. Australia, fig. 9, p. 451, *hyporhoda*, Sierra Leone, fig. 10, p. 453, *atritermina*, Sangir, fig. 23, p. 456, *biseriata*, Borneo, fig. 27, p. 458, *eos*, Java, fig. 19, p. 459, *megala*, China, fig. 21, p. 462, *atrifusa*, Queensland, fig. 26, *uniformeola*, Borneo, p. 464, HAMPSON, Cat. Lep. Phal. ii; *A. confina*, pl. xxxv, fig. 2, *xantherythra*, fig. 5, p. 563, *dentifera*, fig. 18, p. 564, New Guinea, id. addenda : n. spp.
- Asuridia* n. g., p. 412, type *Ammatho carnipicta* Butl., with *A. metaphæa* n. sp., Sikkiim, p. 413, pl. xxix, fig. 20, HAMPSON, t. c.
- Atosia* n. g. for *Parasa denia* Moore, SNELLEN, p. 92, Tijdschr. Ent. xliii.
- Automeris*, protective attitudes, cocoons, p. 235, *A. janus*, larva, poisonous hairs, p. 236, BARRETT, Canad. Ent. xxxii; *A. coresus*, *viridescens*, larvæ, BERG, p. 207, Comun. Mus. Buenos Aires i.
- A. obscura*, *postalbida*, *flammans*, p. 228, *amanda*, p. 229, S. America, SCHAUSS, J. N. York Ent. Soc. viii, n. spp.
- Automolis melea*, Venezuela, *pratti*, Colombia, DRUCE, p. 66, Ann. Nat. Hist. vi, n. spp.
- Bantana albida* Walk., figure, pl. ii, fig. 12, SWINHOE, Cat. Lep. Het. ii.
- Belemnia attitudes*, p. 508, *mygdon*, p. 509, Colombia, DRUCE, Ann. Nat. Hist. v, n. sp.
- Billetia* n. g. near *Stauropus*, for *B. rubripuncta* n. sp., Tonkin, JOANNIS, p. 281, Bull. Soc. ent. France 1900.
- Blabioides* n. g., p. 279, type *Pseudoblabe snelleni* Rits., HAMPSON, Cat. Lep. Phal. ii.
- Blenina calena*, Queensland, SWINHOE, p. 81, pl. ii, fig. 10, Cat. Lep. Het. ii, n. sp.
- Bombyx quercus* ♂ var., FROHAWK, pl. iii, fig. 8, p. 103, Entomologist xxxiii.
- Boriza trajectory*, Paraguay, DOGNIN, p. 437, Ann. Soc. ent. Belgique xlv, n. sp.
- Brachiosia* n. g. *Lithosiinae*, p. 334, for *B. castaneola* n. sp., Sangir, p. 335, HAMPSON, Cat. Lep. Phal. ii.
- Brachyglene grandis*, Colombia, DRUCE, p. 510, Ann. Nat. Hist. v, n. sp.
- Bruandia* n. g. *Psychidae* type *reticulatella*, TUTT, p. 20, Ent. Rec. xii.
- B. reticulatella*, *comitella*, characters, CHAPMAN, p. 90, Ent. Rec. xii.
- Bunæa caffraria*, larva, pl. xlvii, fig. 8, p. 303, FAWCETT, Tr. Zool. Soc. London xv.

- B. tanganicæ*, p. 21, *rosea*, *inornata*, *pallens*, p. 22, Africa, SONTTHONNAX, Echange xvi, n. spp.
- Calapterote* n. g. *Eupterotidæ*, for *C. butleri* n. sp., Buru, HOLLAND, p. 555, Nov. Zool. vii.
- Calidota* n. g. for *Arctia strigosa* Walk., larva of which described, DYAR, pp. 267–270, P. U. S. Mus. xxiii.
- Callidula miokensis* Pag. to *Cleis*, p. 31, pl. iii, figg. 8, 11, PAGENSTECHER, Zoologica xxix.
- Calligenia limonis*, Queensland, LUCAS, p. 139, P. Soc. Queensland xv, n. sp.
- Callimorpha* referred to *Hypsidæ*, HAMPSON, p. x, P. ent. Soc. London 1900; *C. dominula* var., FUCHS, p. 41, Jahrb. nassau. Ver. liii; *C. dominula* var. n. *crocea*, SCHULTZ, p. 219, Illustr. Zeitschr. Ent. v.
- Callisthenia* n. g. type *Mæpha plicata* Butl., HAMPSON, p. 362, Cat. Lep. Phal. ii.
- Callosamia promethia*, experiments on mating, MAYER (872, 873).
- Canerkes gloriosus*, Sumatra, pl. v, fig. 6, p. 275, *albivitta*, no locality, p. 276, ROTHSCHILD, Nov. Zool. vii, n. spp.
- Cania bilinea*, larva, PIEPERS, p. 85, pl. ii, fig. 7, Tijdschr. Ent. xliii.
- Caprima bipars*, Solomon Ids., *rotunda*, Louisiade group, HAMPSON, p. 289, Cat. Lep. Phal. ii, n. spp.
- Caripodia* n. g. *Lithosiinæ* for *C. chrysargyria*, *metaleuca* n. spp., Trop. Africa, HAMPSON, p. 248, t. c.
- Carsinopodia* n. g., p. 249, type *Gnophria furcifasciata* Butl., HAMPSON, t. c.
- Carthara surynorta*, Mexico and Parana, *oaxacana*, p. 231, *orizava*, Mexico, *pamina*, Parana, p. 232, SCHAUS, J. N. York Ent. Soc. viii, n. spp.
- Caulocera* n. g. type *Chamaita crassicornis* Walk., with *C. xantholopha* n. sp., Pulo Laut, HAMPSON, p. 529, Cat. Lep. Phal. ii.
- Caviria dubia*, Congo, AURIVILLIUS, p. 1056, Ofv. Ak. Forh. lvii, n. sp.
- Celama geminata*, Madagascar, MABILLE, p. 727, Ann. Soc. ent. France lxviii, n. sp.
- Caprimima* n. g. *Lithosiinæ*, for *albicollis* Pagenst., HAMPSON, p. 561, Cat. Lep. Phal. ii.
- Celama rufa*, Ceylon, pl. xviii, fig. 2, *encausta*, fig. 3, India, p. 8, *disticta*, fig. 5, India, *aphyla*, fig. 6, California, p. 11, *duplicilinea*, fig. 8, India, p. 12, *streptographia*, Ceylon, fig. 10, p. 13, *euryzonata*, Sumatra, p. 16, fig. 11, *suffusa*, India, fig. 13, p. 18, *appelia*, Brazil, fig. 16, p. 20, *melatopha*, W. Africa, fig. 21, p. 27, *polia*, fig. 22, p. 28, *phæochroa*, fig. 24, p. 29, India, *microlopha*, W. Africa, fig. 32, p. 31, HAMPSON, t. c. n. spp.
- Ceratonema albidivisum*, Sikkim, HAMPSON, p. 232, J. Bombay Soc. xiii; figure, t. c., pl. i, fig. 10, p. 265 : n. sp.
- Cerura phyllis*, Brazil, DRUCE, p. 517, Ann. Nat. Hist. v, n. sp.
- Chalia pungelerii*, Japan, HEYLAERTS, p. 190, Ann. Soc. ent. Belgique xlv, n. sp.
- Chamaita metamelæna*, New Guinea, HAMPSON, p. 565, pl. xxxv, fig. 15, Cat. Lep. Phal. ii, n. sp.
- Charagia virescens*, partial life history, QUAIL, pp. 419–421, Tr. ent. Soc. London 1900.
- Chilena sabrina*, Somaliland, DRUCE, p. 20, pl. i, fig. 2, P. Zool. Soc. London 1900, n. sp.
- Chionæma obliquilineata*, Sikkim, pl. xxvi, fig. 24, p. 299, *ridleyi*, Singapore, pl. xxxiv, fig. 14, p. 300, *obscura*, Queensland, p. 301, *lutipes*, Philippines, pl. xxvii, fig. 1, *nigrilineata*, Sumatra, fig. 2, p. 311, *melanoplaga*, *fumea*, N. Guinea, p. 318, *marshalli*, Natal, fig. 26, p. 325, *infantula*, fig. 10, Borneo, p. 326, HAMPSON, Cat. Lep. Phal. ii, n. spp.
- Chionosia* n. g., p. 359, type *Calligenia apicalis* Zell., with *C. zonata* n. sp., Paramaribo, p. 360, pl. xxviii, fig. 12, HAMPSON, t. c.

- Chrysallactis* n. g. *Lithosiinæ* for *C. aureorubra* n. sp., Louisiana Ids., HAMPSON, p. 334, t. c.
- Chrysochlorosia* n. g. *Lithosiinæ*, p. 351, type *C. callistia* n. sp., Bolivia, p. 352, HAMPSON, t. c.
- Chrysorabdia alpina*, Tibet, pl. xxiii, fig. 17, p. 184, HAMPSON, t. c. n. sp.
- Chrysoscota* n. g. type *C. auranticeps* n. sp., N. Guinea, pl. xxi, fig. 2, HAMPSON, p. 110, t. c.
- Chrysozana* n. g. *Lithosiinæ*, for *C. cræsus* n. sp., Bolivia, HAMPSON, p. 554, t. c.
- Cisthene subjecta*, egg and larva, DYAR, pp. 266–268, P. U. S. Mus. xxiii.
- C. unicincta*, Bogotá, HAMPSON, p. 246, Cat. Lep. Phal. ii, n. sp.
- Cleis dichroa*, *propinqua*, synonymy, HOLLAND, p. 558, Nov. Zool. vii.
- Clemensia roseata*, Brazil, p. 401, *centralis*, Guatemala, pl. xxix, fig. 18, p. 402, *russata*, Costa Rica, fig. 21, p. 403, HAMPSON, Cat. Lep. Phal. ii, n. spp.
- Cletthara herbida* Walk. (as *Dumatha*) figure, SWINHOE, p. 78, Cat. Lep. Het. ii.
- Clisiocampa disstria*, popular name, SLINGERLAND, HOWARD, Canad. Ent. xxxii, p. 54.
- C. vulpes*, Chitral, HAMPSON, p. 233, pl. B, fig. 26, J. Bombay Soc. xiii, n. sp.
- Cloësia* n. g. for *Ichoria parthia* Druce, HAMPSON, p. 345, Cat. Lep. Phal. ii.
- Coloradia doris*, Colorado, BARNES, p. 46, Canad. Ent. xxxii, n. sp.
- Conosia* n. g. for *Lithosia aspersa* Walk., HAMPSON, p. 542, Cat. Lep. Phal. ii.
- Conilepia* n. g. for *Æonistis nigricosta* Leech, HAMPSON, p. 219, t. c.
- Cossus ligniperda*, pupation, ADKIN, MAY, Entomologist xxxiii, p. 128; CARTER, t. c. p. 158; *C. orc* and *ligniperda*, eggs, CHAPMAN, p. 317, Ent. Rec. xii.
- C. stertzi*, Central Asia, PÜNGELER, p. 288, pl. viii, fig. 3, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Crambidia scoteola*, Bolivia, pl. xxi, fig. 25, p. 127, HAMPSON, Cat. Lep. Phal. ii, n. sp.
- Cretonotus albistriga*, larva, imago, p. 50, pl. vi, figg. 3, 4, Ind. Mus. Notes v.
- Crinodes minuta*, Amazons, DRUCE, p. 516, Ann. Nat. Hist. v, n. sp.
- Ctenosia* n. g. type *Pusiola psectriphora* Dist., HAMPSON, p. 130, Cat. Lep. Phal. ii.
- Ctenucha mennisata*, Bolivia, DOGNIN, p. 213, Ann. Soc. ent. Belgique xlv, n. sp.
- Cyclomilta* n. g. for *Mitochrista melanolepia* Dudg., HAMPSON, p. 512, Cat. Lep. Phal. ii.
- Cyclosiella* n. g. for *Hemonia dulcicula* Swinh., HAMPSON, p. 548, t. c.
- Cyclosticta* n. g. for *discata* Schaus, HAMPSON, p. 188, t. c.
- Cyenia insulata*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
- Cyllopoda* etc., see *Geometridæ*.
- Cypra argenna*, Madagascar, MABILLE, p. 724, Ann. Soc. ent. France lxxviii, n. sp.
- Cyptonychia* n. g. *Lithosiinæ* for *flaviceps* Druce, HAMPSON, p. 253, Cat. Lep. Phal. ii.
- Dalailama*, characters and position, REBEL, p. 107, Deutsche ent. Zeitschr. Lep. xiii.
- Darala consuta*, Queensland, LUCAS, p. 139, P. Soc. Queensland xv, n. sp.
- Darantoides* n. g. *Lithosiinæ*, p. 565, for *D. rubroflava* n. sp., New Guinea, pl. xxxv, fig. 13, p. 566, HAMPSON, Cat. Lep. Phal. ii.
- Darna cecata*, Ecuador, p. 213, *abadesa*, Colombia, p. 214, DOGNIN, Ann. Soc. ent. Belgique xlv; *D. formosa*, Bolivia, DOGNIN, p. 438, t. c. : n. spp.



- Dasychira nivalis* var. *obscurata*, STAUDINGER, p. 337, Deutsche ent. Zeitschr. Lep. xii; *D. angulata*, pl. i, fig. 13, p. 415, *nigra*, pl. ii, fig. 19, p. 416, figures, DUDGEON, J. Bombay Soc. xiii; *D. grænlantica*, larva, AURIVILLIUS, p. 1137, Ofv. Ak. Forh. lvii; *D. goodi*, parasitic Lep. in nest of, JOANNIS (664).
- D. georgiana*, Natal, p. 314, pl. xlix, fig. 19, larva, pupa, figg. 20, 21, FAWCETT, Tr. Zool. Soc. London xv, n. sp.
- Deroca hidda*, Jaintia Hills, SWINHÖE, p. 306, Ann. Nat. Hist. vi, n. sp.
- Desmeocrera congoana*, Africa, AURIVILLIUS, p. 1049, Ofv. Ak. Forh. lvii, n. sp.
- Diacrisia chienea*, p. 56, *diplosticta*, *rhodesiana*, p. 57, S. Africa, HAMPSON, Ann. S. African Mus. ii, n. spp.
- Dialithoptera* n. g., type *Pisara gemmata*, HAMPSON, p. 50, Cat. Lep. Phal. ii.
- Diarrhabdosia* n. g. for *Eustixis minima* Butl., HAMPSON, p. 517, t. c.
- Diduga annulata*, Sambawa, p. 539, *pectinifer*, p. 540, *trichophora*, p. 541, Pulo Laut, HAMPSON, t. c. n. spp.
- Diplonyx* n. g. *Lithosiinæ* for *D. infumata* n. sp., S. Africa, HAMPSON, p. 249, t. c.
- Disaulota* n. g. for *Areva leptalina* Druce, HAMPSON, p. 189, t. c.
- Disoidemata* n. g. *Lithosiinæ*, for *D. osmophora* n. sp., Mexico, HAMPSON, p. 188, t. c.
- Drepana* (*Gogane*) *tetrathyra*, Madagascar, MABILLE, p. 724, Ann. Soc. ent. France lxviii; *D. undulifera*, Tibet, HAMPSON, p. 228, pl. B, fig. 10, J. Bombay Soc. xiii : n. spp.
- Dryopteris adona*, Florida, STRECKER, p. 30, Suppl. iii, n. sp.
- Dudgeonea* n. g. *Cossidæ* for *D. leucosticta* n. sp., India and Africa, HAMPSON, p. 227, J. Bombay Soc. xiii.
- Dulichia fasciata*, larva, pl. xlix, figg. 13, 14, p. 314, FAWCETT, Tr. Zool. Soc. London xv.
- Dycladia lydia*, S. Brazil, DRUCE, p. 64, Ann. Nat. Hist. vi, n. sp.
- Eurias clorana* var. *afflutana*, FUCHS, p. 37, Jahrb. Nassau. Ver. liii; *E. insulana*, larva, cocoon, pl. xlix, figg. 25, 26, p. 316, FAWCETT, Tr. Zool. Soc. London xv.
- E. turana*, Transcaspian, GRUM-GRSHIMAILO, p. 461, Annuaire Mus. St. Petersb. iv; *E. crocea*, Comoro Ids., MABILLE, p. 727, Ann. Soc. ent. France lxviii : n. spp.
- Eilema* Hubn. altered to *Ilema*, HAMPSON, p. 130, Cat. Lep. Phal. ii.
- Emydia cribrum* varr., SOUTH, pp. 67, 68, figg. 1-7, Entomologist xxxiii.
- Etanna* Walk., systematic position and components, SWINHÖE, p. 78, Cat. Lep. Het. ii.
- Endagria jordana* var. *suavis*, pl. v, fig. 7, p. 355, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii.
- Endoxyla anceps*, Java, SNELLEN, p. 40, Tijdschr. Ent. xliii, n. sp.
- Engyophlebus* n. g. *Eceticinarum*, p. 2, for *E. obesus* n. sp., W. Africa, p. 3, KARSCH, Ent. Nachr. xxvi.
- Epichnopteryx* subg. n., see *Rebelia*; *E. pulla* varr. n. *montana montanella*, HEYLAERTS, p. 189, Ann. Soc. ent. Belgique xlv.
- E. alpina*, Switzerland, HEYLAERTS, p. 189, t. c. n. sp.
- Eressa catoria*, Jaintia Hills, SWINHÖE, p. 305, Ann. Nat. Hist. vi, n. sp.
- Estigmene tenuistrigata*, Mashonaland, HAMPSON, p. 54, Ann. S. African Mus. ii, n. sp.
- Eucereon confine*, larva, DYAR, p. 262, P. U. S. Mus. xxiii.
- E. atolia*, p. 507, *ino*, *resina*, p. 508, Colombia, DRUCE, Ann. Nat. Hist. v; *E. giganteum*, Colombia, *testaceum*, *E. ? fanum*, Venezuela, DRUCE, p. 65, op. cit. vi; *E. costinotatum*, Brazil, *intranotatum*, Ecuador, DOGNIN, p. 436, Ann. Soc. ent. Belgique xlv : n. spp.



- Euclea herbina*, *dolita*, *baranda*, S. America, p. 230, *chiriquensis*, Chiriqui, p. 231, SCHAUS, J. N. York Ent. Soc. viii, n. spp.
- Eucyane kedar*, Colombia, DRUCE, p. 509, Ann. Nat. Hist. v, n. sp.
- Eudyarda venata*, larva, BERG, p. 208, Comun. Mus. Buenos Aires i.
- Eugoa pluripunctata*, Madagascar, MABILLE, p. 725, Ann. Soc. ent. France lxviii; *E. africana*, Cape Colony, pl. xxxiv, fig. 2, p. 545, *obscura*, Borneo, fig. 16, p. 548, HAMPSON, Cat. Lep. Phal. ii : n. spp.
- Eugonosis* n. g. for *E. angulifer* Schaus, HAMPSON, p. 295, t. c.
- Euleechia* n. n. for *Callarctia* Leech, DYAR, p. 347, Canad. Ent. xxxii.
- Eulimacodes telligii*, Arizona, BARNES, p. 46, t. c. n. sp.
- Euphlycta* n. g. *Limacodidae*, for *E. erastris* n. sp., Java, pl. iv, fig. 8, SNELLEN, p. 93, Tijdschr. Ent. xliii.
- Euprepia*, characters of N. American larvæ, DYAR, p. 46, J. N. York Ent. Soc. viii; *E. caya* var. *americana*, life-history, GIBSON, pp. 321–325, Canad. Ent. xxxii.
- Euproctis flavicosta*, pl. B, fig. 3, and pl. ii, fig. 18, p. 420, *phæa*, India, HAMPSON, p. 234, J. Bombay Soc. xiii, n. spp.
- Eupseudosoma*, referred to *Syntomidae*, early stages, DYAR, pp. 258–261, P. U. S. Mus. xxiii.
- Eurosia* n. g. type *Setinochroa trimaculata* Hamps., p. 330, with *E. lineata*, Cape Colony, pl. xxvii, fig. 19, *punctitermia*, Bali, pl. xxviii, fig. 9, *melanopera*, Borneo, fig. 10, p. 331, *annulata*, Calcutta, fig. 11, *metaphacola*, Borneo, fig. 1, p. 332, n. spp., HAMPSON, Cat. Lep. Phal. ii.
- Euryptidia* n. g. type *E. univitta* n. sp., Brazil, HAMPSON, p. 230, t. c.
- Eusemia vulcanica* var. *melania*, JOANNIS, p. 280, Bull. Soc. ent. France 1900; *E. butleri*, larva, pupa, pl. xlvii, figg. 14, 15, p. 317, FAWCETT, Tr. Zool. Soc. London xv.
- Eutane alba*, Borneo, pl. xxxiii, fig. 9, p. 496, HAMPSON, Cat. Lep. Phal. ii; *E. triplagata*, Bismarck Arch., pl. ii, fig. 24, p. 59, PAGENSTECHER, Zoologica xxix : n. spp.
- Eutelesia* n. g. for *Nola vulgaris* Druce, HAMPSON, p. 398, Cat. Lep. Phal. ii.
- Eutornopera quinquestriata*, Sikkim, HAMPSON, p. 41, pl. B, fig. 21, J. Bombay Soc. xiii, n. sp.
- Fentonia discosticta*, N. India, HAMPSON, p. 41, t. c. n. sp.
- Fumea*, notes on, CHAPMAN, p. 202, Ent. Rec. xii; *F. casta* varr., CHAPMAN, p. 124, t. c.
- F. scotica*, Scotland, CHAPMAN, p. 320, Tutt Brit. Lep. ii, n. sp. ?; *F. germanica*, Europe, CHAPMAN, p. 125, Ent. Rec. xii : n. spp.
- Garella rotundipennis* Walk., pl. ii, fig. 23, *scoparioides* Walk. (as *Corticata*), fig. 22, figures, SWINHOE, Cat. Lep. Het. ii.
- Gargetta ferreopicta*, Ceylon, HAMPSON, p. 40, J. Bombay Soc. xiii, n. sp.
- Garudinistis* n. g. for *Tospitis eburneana* Walk., HAMPSON, p. 280, Cat. Lep. Phal. ii.
- Gazalina intermixta*, Jaintia Hills, SWINHOE, p. 306, Ann. Nat. Hist. vi, n. sp.
- Gerbatha connexa*, China, LEECH, p. 516, Tr. ent. Soc. London 1900, n. sp.
- Gingla latercule*, Arizona, DYAR, p. 32, J. N. York Ent. Soc. viii, n. sp.
- Giscala intravirens*, S. America, DOGNIN, p. 437, Ann. Soc. ent. Belgique xlv, n. sp.
- Glaucosia* n. g. *Lithosiine* for *G. agyllia* n. sp., Brazil, HAMPSON, p. 229, Cat. Lep. Phal. ii.
- Gloveria arizonensis*, male, BARNES, p. 48, Canad. Ent. xxxii.
- Gnamptonychia* n. g. for *Atolmis flavicollis* Druce, HAMPSON, p. 251, Cat. Lep. Phal. ii.
- Gogana specularis*, pl. viii, fig. 32, *G. pustularia* Walk. (as *Macaria*), fig. 8, figures, SWINHOE, Cat. Lep. Het. ii.
- G. integra*, Penang, WARREN, p. 98, Nov. Zool. vii, n. sp.

- Gonocilix renifera*, Perak, WARREN, p. 99, t. c. n. sp.  
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*Heliosia* n. g. type *Pallene jucunda* Walk., p. 275, with *H. monosticta*, Borneo, *crocopera*, N. Guinea, n. spp., p. 276, HAMPSON, Cat. Lep. Phal. ii.  
*Hemipsilia* n. g. for *Nudaria coa-vestis* Hamps., HAMPSON, p. 532, t. c.  
*Hepialide*, definition, SNELLEN, p. 29, Tijdschr. Ent. xliii.  
*Hepialide*, some points of structure ; life-histories, QUAIL (1061).  
*Hepialus virescens*, some points of larval and imaginal structure, QUAIL (1064).  
*H. uralensis*, Olenek Valley, GRUM-GRSHIMAILO, p. 469, Annuaire Mus. St. Petersb. iv, n. sp.  
*Heterocampa mina*, *eusebia*, Colombia, *ionia*, p. 515, *perses*, Amazons, *volana*, Ecuador, p. 516, DRUCE, Ann. Nat. Hist. v, n. spp.  
*Heterogenea foliola*, Java, SNELLEN, p. 103, Tijdschr. Ent. xliii, n. sp.  
*Heterusia hampsoni*, Buru, HOLLAND, p. 557, Nov. Zool. vii, n. sp.  
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*Hyblea* spp. n., see *Noctuide*.  
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*Hypermæpha* n. g. for *Cisthene sanguinea* Butl., HAMPSON, p. 351, Cat. Lep. Phal. ii.  
*Hyperthagylla* n. g. for *Agylla mira* Butl., HAMPSON, p. 192, t. c.

- Hyphantria cunea*, synonymy, DYAR, p. 16, *Canad. Ent.* xxxii; *H. cunea*, see also *Spilosoma*.
- Hyphorma pannosa*, Java, SNELLEN, p. 59, pl. iv, fig. 3; larva, PIEPERS, p. 60, pl. i, fig. 7, *Tijdschr. Ent.* xliii: n. sp.
- Hypopta asema*, Askhabad, PÜNGELER, p. 288, pl. viii, fig. 5, *Deutsche ent. Zeitschr. Lep.* xii; *H. itzalana*, Arizona, STRECKER, p. 30, *Suppl.* iii: n. spp.
- Hyposiccia* n. g. type *H. amnæa* Swinh., HAMPSON, p. 406, *Cat. Lep. Phal.* ii.
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- Ichthyura spissicornis*, Madagascar, MABILLE, p. 723, *Ann. Soc. ent. France* lxxiii; *I. transecta*, Sikkim, HAMPSON, p. 43, pl. B, fig. 20, *J. Bombay Soc.* xiii: n. spp.
- Idalus pythia*, Bolivia, DRUCE, p. 67, *Ann. Nat. Hist.* vi, n. sp.
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- Illice phæiceps*, Mexico, pl. xxix, fig. 16, p. 366, *orbonella*, Brazil, fig. 32, p. 372, HAMPSON, *Cat. Lep. Phal.* ii; *I. xanthospila*, Brazil, pl. xxxv, fig. 8, *id. addenda*, p. 562: n. spp.
- Inguva burseræ*, larva, DYAR, p. 271, *P. U. S. Mus.* xxiii.
- Isbarta curiosa*, Java, SWINHOE, p. 305, *Ann. Nat. Hist.* vi, n. sp.
- Jostodes semicirculata*, Ecuador, p. 236, *cærulescens*, Colombia, p. 239, HAMPSON, *Cat. Lep. Phal.* ii, n. spp.
- Labanda ceylusalis* Walk., figure, pl. ii, fig. 1, SWINHOE, *Cat. Lep. Het.* ii.
- Lacosoma chiridota*, larval history, DYAR, pp. 178–180, pl. vi, *J. N. York Ent. Soc.* viii.
- Lælia calamaria*, Nilgiris, HAMPSON, p. 234, pl. B, fig. 19, *J. Bombay Soc.* xiii; *L. adalia*, Jaintia Hills, SWINHOE, p. 307, *Ann. Nat. Hist.* vi: n. spp.
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- Lamprochloë* n. g. *Zygænidæ*, for *L. albipuncta* n. sp., Ceylon, HAMPSON, p. 226, *J. Bombay Soc.* xiii.
- Lamprosia* n. g. for *Lithosia eborella* Boisd., HAMPSON, p. 217, *Cat. Lep. Phal.* ii.
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- Lasiocampa populifolia*, rearing of, LAMBILLION, pp. 11, 12, *Ent. Rec.* xii.
- Latoia lepida*, p. 76, pl. ii, figg. 4, 5, *bimaculata*, p. 81, pl. ii, fig. 6, larvæ, PIEPERS, *Tijdschr. Ent.* xliii.
- L. gentilis*, Java, SNELLEN, p. 78, pl. iv, fig. 7, t. c. n. sp.
- Lelymena* n. g. *Drepanulidæ* for *L. misalis* n. sp., W. Africa, KARSCH, p. 251, *Ent. Nachr.* xxvi.
- Lemoniidæ* (*Crateronyx*), a distinct family, REBEL (1075).
- Lenodora crenata*, Ceylon, HAMPSON, p. 233, *J. Bombay Soc.* xiii, n. sp.
- Leptopepla* n. g., p. 520, *Lithosiinæ*, for *L. procridiformis* n. sp., Bolivia, p. 521, HAMPSON, *Cat. Lep. Phal.* ii.
- Leucoma salicis* var., FUCHS, p. 44, *Jahrb. nassau. Ver.* liii.

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- Lexis fulveola*, pl. xxi, fig. 10, *phæola*, fig. 7, India, HAMPSON, t. c. n. spp.
- Limacodidæ* of Java; table of genera, figures of larvæ, PIEPERS & SNELLEN, Tijdschr. Ent. xliii, pp. 45-52, pls. i-iv.
- Limacodes lorquini* Reak. = (*princeps* Staud.), STRECKER, p. 28, Suppl. iii.
- Lithoprocris* n. g. type *L. methyalea* n. sp., Bolivia, HAMPSON, p. 342, Cat. Lep. Phal. ii.
- Lithosia amaurobapha*, p. 725, *pallidicosta*, *umbriger*, *cirrochroa*, *catenata*, Madagascar, MABILLE, p. 726, Ann. Soc. ent. France lxviii; *L. circumducta*, Bismarck Arch., PAGENSTECHER, p. 57, Zoologica xxix : n. spp.
- Lophopteryx eumeta*, Colombia, DRUCE, p. 514, Ann. Nat. Hist. v, n. sp.
- Ludia smilax*, larva, cocoon, FAWCETT, pl. xlix, figg. 6, 7, pp. 305, 306, Tr. Zool. Soc. London xv.
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- Lymantriopsis* n. g. for *Nudaria lacteata* Holl., HAMPSON, p. 465, Cat. Lep. Phal. ii.
- Macaduma micans* Mysol, *fusca*, N. Guinea, HAMPSON, p. 267, t. c.; *M. nigripuncta*, pl. xxxv, fig. 7, *albata*, fig. 23, N. Guinea, id. addenda, p. 560 : n. spp.
- Machærophora fumigata*, Bismarck Arch., PAGENSTECHER, p. 63, pl. i, fig. 18, Zoologica xxix, n. sp.
- Macrocosus* n. g. *Cossidæ*, for *M. rudis* n. sp., Congo, AURIVILLIUS, p. 1054, Ofv. Ak. Forh. lviii.
- Macroplectra tripunctata*, S. Africa, MABILLE, p. 724, Ann. Soc. ent. France lxviii, n. sp.
- Macrosia* n. g. type *Lithosia fumeola* Walk., HAMPSON, p. 129, Cat. Lep. Phal. ii.
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- M. edwardsella*, Aix-les-Bains, TUTT, p. 43, t. c.; *M. mitfordella* (Chapman), *hibernicella*, Britain, TUTT, p. 314, Brit. Lep. ii : n. spp.
- Mazeras soteria*, Argentina, DRUCE, p. 509, Ann. Nat. Hist. v, n. sp.
- Megacraspedum 5-punctatum*, ? Madagascar, MABILLE, p. 727, Ann. Soc. ent. France lxviii, n. sp.
- Melaleucia* n. g. type *Nola obliquifasciata*, HAMPSON, p. 78, Cat. Lep. Phal. ii.
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- Melanæma sanguinea*, N. Guinea, HAMPSON, p. 414, Cat. Lep. Phal. ii, n. sp.
- Melanographia* n. g. *Nolinæ*, type *N. flexilineata*, HAMPSON, p. 48, t. c.
- Mesoscia pascora*, Parana, SCHAUS, p. 229, J. N. York Ent. Soc. viii, n. sp.
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- Metalobosia* n. g. type *Odozana cuprea* Schaus, HAMPSON, p. 373, Cat. Lep. Phal. ii.
- Metallosia* n. g. *Lithosiinæ* for *M. chrysotis* n. sp., Brazil, HAMPSON, p. 555, t. c.
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- Metarctia flavicincta*, Congo, AURIVILLIUS, p. 1057, Ofv. Ak. Forh. lvii; *M. flavivena*, E. Africa, HAMPSON, p. 40, Ann. S. African Mus. iii: n. spp.
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- Nephelomilta* n. g. for *Lyclene suffusa* Hamps., HAMPSON, p. 468, t. c.
- Nephelesia* n. g. for *Lithosia cæcina* Dr., HAMPSON, p. 214, t. c.
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*Thosea cervina*, varr., DUDGEON, pp. 259, 260, J. Bombay Soc. xiii; *T. divergens*, p. 66, *loesa*, pl. ii, figg. 1, 2, p. 69, larvæ, *bisura*, dimorphic ♀, p. 71, PIEPERS & SNELLEN, Tijdschr. Ent. xliii.  
*T. postornata*, India, China, p. 261, pl. ii, fig. 29, DUDGEON, J. Bombay Soc. xiii; *T. postornata*, Shanghai, HAMPSON, p. 231, J. Bombay Soc. xiii; *T. fluxa*, p. 68, pl. iv, fig. 5, *sythoffi*, p. 70, *mixta*, p. 71, Java, SNELLEN, Tijdschr. Ent. xliii : n. spp.  
*Threnosia* n. g. type *Tigrioides heminephes* Meyr., HAMPSON, p. 96, Cat. Lep. Phal. ii.  
*Thyone tincta*, Bolivia, pl. xxviii, fig. 5, HAMPSON, p. 348, t. c. n. sp.  
*Thyrgorina sikkimensis*, India, HAMPSON, p. 499, J. Bombay Soc. xiii, n. sp.  
*Totype glenwoodii*, Colorado, BARNES, p. 47, Canad. Ent. xxxii, n. sp.  
*Tortricidia fiskeana*, New Hampshire, DYAR, p. 333, Ent. News Philad. xi, n. sp.  
*Tortricosia* n. g. *Lithosiinae* for *T. excisa*, n. sp., Birma, HAMPSON, p. 291, Cat. Lep. Phal. ii.  
*Trichiosoma hemigenum*, eggs, oviposition, XAMBEU, p. 45, Naturaliste xxii.  
*Trichocerosia* n. g. for *T. atrifulva*, n. sp., New Guinea, pl. xxxv, fig. 11, HAMPSON, p. 563, Cat. Lep. Phal. ii.  
*Trichogyia semifascia*, larva, PIEPERS, p. 104, Tijdschr. Ent. xliii.  
*Tricholepis xanthomelas*, Tenimber, HAMPSON, p. 424, Cat. Lep. Phal. ii, n. sp.  
*Triphysa phryne* var. n. *tscherskii*, GRUM-GRSHIMAILO, p. 461, Annuaire Mus. St. Petersb. iv.  
*Tropæa truncatipennis*, Mexico, SONTTHONNAX, cf. BARRETT, p. 403, Ent. News Philad. xi, n. sp.  
*Ubena* n. g. *Saturniidae*, p. 357, for *U. fulleborniana*, n. sp., E. Africa, p. 358, KARSCH, Ent. Nachr. xxvi.  
*Urota sinope*, larva, pupa, pl. xlvii, figg. 9, 10, p. 305, FAWCETT, Tr. Zool. Soc. London xv.  
*Urozana* n. g. type *Odozana cordatula* Druce, HAMPSON, p. 378, Cat. Lep. Phal. ii.  
*Utriculifera macroplaga*, Pulo Laut, HAMPSON, p. 290, t. c.; *U. aplaga*, Guinea, pl. xxxv, fig. 3, addenda, p. 561, HAMPSON, n. spp.  
*Whittleia* n. g. *Epichnopterygidae* type *reticella*, TUTT, p. 20, Ent. Rec. xii.  
*Xanthetis* n. g. type *Cyme luzonica* Feld., HAMPSON, p. 414, Cat. Lep. Phal. ii.  
*Xantholopha* n. g. for *X. purpurascens* Schaus, HAMPSON, p. 356, t. c.  
*Zanola narda*, p. 232, *liliana*, p. 233, Parana, SCHAUS, J. N. York Ent. Soc. viii, n. spp.  
*Zeuzera postexcisa*, figure, SNELLEN, pl. iv, fig. 1, p. 41; *Z. coffeæ*, larva, native names, PIEPERS, pl. i, fig. 1, p. 42, Tijdschr. Ent. xliii.  
*Z. (Azygopheps) ariana*, Samarcand, GRUM-GRSHIMAILO, p. 468, Annuaire Mus. St. Petersb. iv; *Z. neuroxantha*, N. S. Wales, LOWER, p. 39, P. Linn. Soc. N. S. Wales : n. spp.  
*Zygæna*; of Normandy, *Z. hippocrepidis* Steph. nec Hb., DUPONT, pp. 47–78, Bull. Soc. Elbeuf xviii; *Z. (Anteris) ampla*, larva, cocoon, pl. xlix, figg. 27–29, p. 313, FAWCETT, Tr. Zool. Soc. London xv.  
*Z. escaleraï*, Persia, POUJADE, p. 68, Bull. Mus. Paris 1900; *Z. rubricollis*, India, HAMPSON, p. 224, J. Bombay Soc. xiii : n. spp.

- Zygænoprocris* n. g. *Zygænida*, for *Z. chalcoclora*, n. sp., India, HAMPSON, p. 225, t. c.  
*Zygænusia* n. n. for *Zygænopsis* Swinh. nec Feld., HAMPSON, p. 423, Cat. Lep. Phal. ii.

## NOCTUIDÆ (incl. CYMATOPHORIDÆ).

[Cf. BUCKLER (191), DODGE (338), DRUCE (348, 983), DYAR (354), FAWCETT (406), FRENCH (446), GROTE (537, 538), HAMPSON (547), HOLLAND (595), JOANNIS (662), LEECH (807), LOWER (828), LUCAS (832), MABILLE (843), MEYRICK (906), PAGENSTECHER (975), PETERSEN (993), PÜNGELER (1060), SCHULTZ (1165), SEMPER (1201), SMITH (1236–1240), STAUDINGER (1267–1270), STRECKER (1289), SWINHÖE (1298, 1299).]

*Noctuidæ* from China and Japan, LEECH (807).

The types of N. American genera of *Noctuidæ*, GROTE, pp. 209–212, 225, 292, Canad. Ent. xxxii.

*Abriesa* n. g. *Hyphenina*, for *A. derna* n. sp., Queensland, SWINHÖE, p. 312, Ann. Nat. Hist. vi.

*Acantholipes sordidula* Walk. as (*Chodda*), figure, pl. iv, fig. 26, SWINHÖE, Cat. Lep. Het. ii.

*A. curvilexa* (sic), China, LEECH, p. 560, Tr. ent. Soc. London 1900, n. sp.

*Acanthodica hages*, Colombia, DRUCE, p. 518, Ann. Nat. Hist. v, n. sp.

*Achæa melicerte*, larva and pupa, SEMPER, p. 554, pl. s, figg. 1, 2, Schmetterl. Philipp. ii.

*Acontia*; the N. American revised, SMITH, pp. 47–84, Tr. Amer. ent. Soc. xxvi; *A. intersepta*, larva and pupa, pl. q, figg. 10, 11, SEMPER, Schmetterl. Philipp. ii.

*A. major*, p. 64, *nuicola*, p. 67, *lucasi*, p. 68, *quadriplaga*, p. 72, *schwarzii*, *arida*, p. 73, *coquillettii*, p. 74, *neocula*, p. 75, *behrii*, p. 76, *meskei*, p. 79, *libadis*, p. 80, N. America, SMITH, Tr. Amer. ent. Soc. xxvii, n. spp.

*Acontiola* n. g. near *Acontia*, for *A. sancta* n. sp., Syria, pl. v, fig. 4, STAUDINGER, p. 382, Deutsche ent. Zeitschr. Lep. xii.

*Acronycta*; synonymical results of an examination of N. American in the British Museum, SMITH, Canad. Ent. xxxii, pp. 333–336; *A. alni* var., FUCHS, p. 46, Jahrb. nassau. Ver. liii.

*A. nigricans*, China, LEECH, p. 104, Tr. ent. Soc. London 1900, n. sp.

*Adrapsa ochracea*, *marginata*, p. 614, *A.?* *rivulata*, *incertalis*, p. 615, *reticulatis*, p. 616, China, LEECH, t. c.; *A. albapicata*, *albibasalis*, p. 572, *scotosa*, *speculifera*, p. 573, Buru, HOLLAND, Nov. Zool. vii : n. spp.

*Ædia agropoides* Walk. (as *Cædesa*), pl. iv, fig. 17, *angulifera* Walk. (as *Anophia*), pl. ii, fig. 26, figures, SWINHÖE, Cat. Lep. Het. ii; *Æ. acronyctoides*, larva, pl. r, fig. 12, *longinquua*, fig. 18, pl. lx, larva and pupa, pl. r, figg. 14, 15, SEMPER, Schmetterl. Philipp. ii.

*Æ. pruna*, Philippines, id. t. c. p. 552, pl. lx, fig. 17, n. sp.

*Agabra spotha*, Nilgiri Hills, SWINHÖE, p. 37, pl. i, fig. 16, Cat. Lep. Het. ii, n. sp.

*Agonista fuscescens*, China, India, LEECH, p. 549, Tr. ent. Soc. London 1900; *A. morio*, Philippines, SEMPER, p. 547, Schmetterl. Philipp. ii : n. spp.

*Agrophila luda* Druce, referred to *Tripudia*, SMITH, p. 489, P. U. S. Mus. xxii, n. sp.

*Agrotis*; varr. from Thian Schan, STAUDINGER, pp. 338–340, Deutsche ent. Zeitschr. Lep. xii; *A. glareosa* var. n. *limbata*, GOUIN, p. 95, pl. v, fig. 4, Act. Soc. Bordeaux v; *A. chaldaica* var. *spodia*, PÜNGELER,



- p. 289, Deutsche ent. Zeitschr. Lep. xii; *A. margaritacea* var., *plecta* var., FUCHS, p. 216, Jahrb. nassau. Ver. liii; *A. janthina* var. n. *latimarginata*, RÖBER, p. 204, Ent. Nachr. xxvi; *A. hadgina* var.? *zeituna*, pl. vi, fig. 6, p. 361, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii; *A. C-nigrum, segetum*, distribution, SNELLEN, Tijdschr. Ent. xliii, p. 47, Verslag; *A. grisea, flammata*, larvæ, WULLSCHLEGEL, p. 289, Mt. Schweiz. ent. Ges. x; *A. segetis*, larva, pl. xlix, fig. 16, p. 317, FAWCETT, Tr. Zool. Soc. London xv.
- A. clarivena*, pl. iv, fig. 8, p. 116, *gaurax*, fig. 9, p. 117, *coryphæa*, fig. 4, p. 118, Centr. Asia, PÜNGELER, Deutsche ent. Zeitschr. Lep. xiii; *A. glebosa*, Taurus, pl. vi, fig. 5, p. 359, *sordescens*, Samarcand, *celebs*, fig. 4, Zeitun, p. 360, *homicida*, fig. 7, Amasia, *inumbata*, Zeitun, p. 363, *cuprina*, fig. 11, *æquicuspis*, fig. 18, p. 365, Centr. Asia, STAUDINGER, op. cit. xii; *A. agalma*, p. 289, pl. viii, fig. 7, *bonza*, fig. 13, *perigrapha*, fig. 10, p. 290, *submolesta*, fig. 14, *humigena*, pl. ix, fig. 1, *hemileuca*, pl. viii, fig. 6, p. 291, Centr. Asia, PÜNGELER, t. c.; *A. pudens*, E. Africa, MABILLE, p. 728, Ann. Soc. ent. France lxviii; *A. plana, exoleta*, p. 26, *oberthuri*, p. 30, China, *post-flava*, Japan, p. 31, *conjuncta*, p. 32, *A. picturata, panda*, p. 33, China, LEECH, Tr. ent. Soc. London 1900; *A. saturnus*, Wisconsin, STRECKER, p. 31, Suppl. iii; *A. eremoides*, p. 257, *procellaris*, p. 258, Laysan Is., MEYRICK, Ent. Mag. xxxvi : n. spp.
- Alamis? binea*, Colombia, DRUCE, p. 520, Ann. Nat. Hist. v, n. sp.
- Alotsa* n. g. for part of *Eutelia*, SWINHOE, p. 87, Cat. Lep. Het. ii.
- Amyna pulvereæ*, China, LEECH, p. 114, Tr. ent. Soc. London 1900, n. sp.
- Anarta myrtilli* var., FUCHS, p. 48, Jahrb. nassau. Ver. liii.
- A. lanuginosa, etacta*, Alaska, SMITH, p. 493, P. Washington Ac. ii, n. spp.
- Anepsichetos* n. g. near *Doryodes*, for *A. bipartita* n. sp., Florida, SMITH, p. 482, P. U. S. Mus. xxii.
- Anigræa rubida*, figure, SWINHOE, pl. ii, fig. 16, Cat. Lep. Het. ii.
- Antiblemma minorata*, Florida, p. 492, *fasciata*, Arizona, p. 493, SMITH, P. U. S. Mus. xxii, n. spp.
- Anticarsia ferruginea*, Florida, SMITH, p. 174, J. N. York Ent. Soc. viii, n. sp.
- Anuga constricta*, early stages, SEMPER, p. 532, pl. r, figg. 1-3, Schmetterl. Philipp. ii.
- Anytus atristrigatus*, N. America, SMITH, p. 460, P. U. S. Mus. xxii; *A. obscurus*, Calgary, *profundus*, Manitoba, SMITH, p. 218, Canad. Ent. xxxii : n. spp.
- Apamea rubella* var. *rhusia*, PÜNGELER, pl. ix, fig. 11, p. 293, Deutsche ent. Zeitschr. Lep. xii.
- A. intermedia*, Japan, p. 60, *concinna, montana*, p. 61, *tripartita*, p. 62, *intermixta*, p. 63, *butleri*, p. 64, *fasciculata*, p. 65, *A. clava*, p. 66, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Apteloides obscura*, China, id. t. c. n. sp.
- Arbostola? viridis*, Colombia, DRUCE, p. 519, Ann. Nat. Hist. v, n. sp.
- Arcilasisa plagiata*, larva and pupa, SEMPER, pl. q, figg. 6, 7, Schmetterl. Philipp. ii.
- Argiva ærosa*, Gilolo, SWINHOE, p. 116, Cat. Lep. Het. ii, n. sp.
- Arsilonche colorata*, N. America, SMITH, p. 414, P. U. S. Mus. xxii, n. sp.
- Atacira* n. g. for *Eutelia approximata* Walk., SWINHOE, p. 87, Cat. Lep. Het. ii.
- Attatha regalis*, larva and pupa, pl. t, figg. 3-5, p. 566, SEMPER, Schmetterl. Philipp. ii.
- Avitta guttulosa* Walk. (as *Osca*), figure, SWINHOE, pl. iii, fig. 6, Cat. Lep. Het. ii.
- Batracharta cassoides* Walk. (as *Carissa*), figure, SWINHOE, pl. iii, fig. 10, t. c.

- Beara subrubra*, Bismarck Arch., PAGENSTECHER, pl. ii, fig. 35, p. 94, Zoologica xxix, n. sp.
- Bertula larusalis* Walk. (as *Isana*), pl. iv, fig. 11, *alpheusalis*, fig. 6, *eudoxusalis* Walk. (as *Bocana*), pl. iii, fig. 23, figures, SWINHÖE, Cat. Lep. Het. ii.
- Bessara quadratipennis*, figure, pl. iii, fig. 17, SWINHÖE, t. c.
- Blepharidia* n. g. for *Heliophobus lama* Püng. (below), *H. grumi* Alph., *Hadena dianthæcina* Staud. and *Trigonophora grumi* Alph., PÜNGELER, p. 122, Deutsche ent. Zeitschr. Lep. xiii.
- Bleptina tenebrosa*, Madagascar?, MABILLE, p. 735, Ann. Soc. ent. France lxxviii; *B. albovenata*, *proxima*, p. 619, *ambigua*, *tripartita*, p. 620, *curvilinea*, p. 621, *descripta*, *sinuosa*, p. 622, *propugnata*, p. 623, *nigristigma*, *venata*, p. 624, *rectilinea*, *contigua*, p. 625, *parallela*, p. 626, *albolinealis*, *B.? vestitalis*, p. 627, China, LEECH, Tr. ent. Soc. London 1900; *B. floccularis*, Bismarck Arch., PAGENSTECHER, p. 117, pl. ii, fig. 31, Zoologica xxix : n. spp.
- Bocana histaspesalis* Walk. (as *Bleptina*), figure, pl. iv, fig. 13, SWINHÖE, Cat. Lep. Het. ii.
- Bocula limbata* Butl., pl. ix, fig. 1, p. 66, HAMPSON, Monogr. Christmas Island.
- Bœthanthia guttulosa*, Borneo, SWINHÖE, p. 593, pl. iii, fig. 6, Cat. Lep. Het. ii, n. sp.
- Bomolocha jugalis* Walk. (as *Hypena*), figure, SWINHÖE, pl. iv, fig. 16, t. c.
- B. vega*, New Mexico, SMITH, p. 494, P. U. S. Mus. xxii, n. sp.
- Brevipecten consanguis*, p. 513, *apicalis*, p. 514, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Brontypena* n. g. for *eximia* Pag., HOLLAND, p. 576, Nov. Zool. vii.
- Bryomima* n. g. near *Bryophila*, for *B. carducha* n. sp., Mardin, pl. vi, fig. 9, STAUDINGER, p. 357, Deutsche ent. Zeitschr. Lep. xii.
- Bryophila mæonis* varr. *sordida*, *rubellina*, STAUDINGER, p. 358, t. c.; *B. postochrea*, larva and pupa, pl. q, figg. 8, 9, p. 521, SEMPER, Schmetterl. Philipp. ii.
- B.? griseata*, China, LEECH, p. 139, Tr. ent. Soc. London 1900; *B. exquisita*, Queensland, LUCAS, p. 150, P. Soc. Queensland xv : n. spp.
- Bryophilopsis tarachoides*, Madagascar, MABILLE, p. 729, Ann. Soc. ent. France lxxviii, n. sp.
- Calamia deserticola*, Biskra, pl. v, fig. 10, p. 371, *modesta*, Jordan, p. 372, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii, n. spp.
- Callopistria floridensis*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
- C. venata*, *albomacula*, China, LEECH, p. 111, Tr. ent. Soc. London 1900; *C. furunculoides*, Bismarck Arch., PAGENSTECHER, p. 74, Zoologica xxix : n. spp.
- Calogramma festiva*, larva, pl. q, figg. 4, 5, p. 516, SEMPER, Schmetterl. Philipp. ii.
- Callyna figurans*, pl. lx, fig. 4, *valliana*, fig. 5, SEMPER, t. c.
- Camptochilus butleri*, Japan, LEECH, p. 647, Tr. ent. Soc. London 1900, n. sp.
- Capnodes punctivena*, early stages, DYAR, p. 274, P. U. S. Mus. xxiii.
- C. acrosema*, Madagascar, MABILLE, p. 734, Ann. Soc. ent. France lxxviii; *C. umbrifera*, Buru, HOLLAND, p. 571, Nov. Zool. vii; *C. punctivena*, Florida, SMITH, p. 175, J. N. York Ent. Soc. viii; *C. ocina*, p. 520, *albipunctata*, p. 521, Colombia, DRUCE, Ann. Nat. Hist. v : n. spp.
- Capotena scripta* Walk. (as *Arbasera*), figure, SWINHÖE, pl. iii, fig. 11, Cat. Lep. Het. ii.
- Caradrina defixa* Walk. (as *Barbesola*), pl. i, fig. 1, SWINHÖE, t. c.
- C. casearia*, Jordan, STAUDINGER, pl. v, fig. 1, p. 375, Deutsche ent. Zeitschr. Lep. xii; *C. chinensis*, p. 117, *fusca*, p. 118, China, *fuliginosa*, Japan, *radiata*, p. 120, *C.? secunda*, p. 121, China, LEECH, Tr. ent.

- Soc. London 1900; *C. peltaloma*, N. S. Wales, LOWER, p. 32, P. Linn. Soc. N. S. Wales xxv; *C. insipida*, Wisconsin, STRECKER, p. 32, Suppl. iii; *C. leucorena*, California, SMITH, p. 477, P. U. S. Mus. xxii : n. spp.
- Carea? variegata*, China, LEECH, p. 524, Tr. ent. Soc. London 1900, n. sp.
- Carneades pugionis*, p. 419, *nevada*, p. 420, *contagionis*, p. 421, *loya*, *flaviscapula*, p. 422, *excogita*, p. 423, *exculta*, *navulus*, p. 424, *megastigma*, *stigmatalis*, p. 425, *termessus*, p. 426, *enteridis*, p. 427, *atropulverea*, p. 428, *compressipennis*, *falerina*, p. 429, *vallus*, p. 430, *sessile*, p. 431, *relaxus*, p. 432, *luteositus*, *tocoyæ*, p. 433, *incubita*, p. 435, *terrenus*, *territoralis*, p. 436, *fulda*, p. 437, *itodes*, p. 438, *lagganæ*, p. 439, *ontario*, *testula*, p. 440, *difformis*, p. 441, *dakota*, p. 442, *holoberba*, *kerrvillei*, p. 443, *ternarius*, p. 444, *noctuiformis*, p. 445, *intrusa*, *neotelis*, p. 446, *atrofusca*, p. 447, *objurgata*, p. 448, *cariosus*, p. 449, *malis*, p. 450, *pindar*, p. 451, *henrietta*, p. 452, *vanidicus*, p. 453, *feminalis*, p. 454, *nordica*, p. 455, *factoris*, p. 456, *cæsius*, p. 457, *acutifrons*, p. 458, *selenis*, p. 459, *laminis*, p. 460, N. America, SMITH, P. U. S. Mus. xxii, n. spp.
- Catada charalis*, Queensland, SWINHOE, p. 311, Ann. Nat. Hist. vi, n. sp.
- Catocala*: notes on N. American, FRENCH, pp. 188–191, Canad. Ent. xxxii; *C. nupta*, abundance in England in 1900, habits, LUCAS, NASH, Entomologist xxxiii, p. 271.
- C. abacta*, Asia Minor, STAUDINGER, p. 113, Deutsche ent. Zeitschr. Lep. xiii; *C. invasa*, p. 531, *hampsoni*, p. 532, *butleri*, p. 534, *columbina*, p. 535, China, LEECH, Tr. ent. Soc. London 1900; *C. barnesii*, Texas, FRENCH, p. 190, Canad. Ent. xxxii; *C. moderna*, Texas, GROTE, p. 191, t. c.; *C. titania*, Louisiana, DODGE, p. 472, Ent. News Philad. xi : n. spp.
- Cauninda archesia*, larva, pl. t, fig. 1, p. 564, SEMPER, Schmetterl. Philipp. ii.
- Cerastis intricata*, characters and synonymy, OBERTHUR, pp. 352–355, Bull. Soc. ent. France 1900.
- Cerocala munda*, Somaliland, DRUCE, p. 19, pl. i, fig. 3, P. Zool. Soc. London 1900, n. sp.
- Cerynea diversalis* Walk. (as *Bertula*), figure, SWINHOE, p. 68, Cat. Lep. Het. ii.
- Chaladra cuculloidis*, figure, pl. iii, fig. 2, SWINHOE, t. c.
- Chamyla* n. g., position doubtful, for *C. idia* n. sp., pl. vii, fig. 9, Thian Schan, STAUDINGER, p. 343, Deutsche ent. Zeitschr. Lep. xii.
- Chloantha? conjuncta*, Centr. Asia, PÜNGBELER, pl. ix, fig. 15, p. 294, t. c. n. sp.
- Chorsia maculosa* Walk., figure, pl. viii, fig. 23, SWINHOE, Cat. Lep. Het. ii.
- Chytolita morbidalis*, early stages, DYAR, p. 278, P. U. S. Mus. xxiii.
- Chytonix semifascia*, Colorado, SMITH, p. 415, t. c. n. sp.
- Cleophana vaulogeri*, Biskra, STAUDINGER, pl. v, fig. 9, p. 378, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Cælophoris* n. g. *Gonopterinae*, for *C. trilineata* n. sp., Africa or Madagascar, MABILIE, p. 733, Ann. Soc. ent. France lxviii.
- Conacalia* n. g., p. 49, for *C. flavicosta* n. sp., New Mexico, p. 58, and *Tarache angustipennis* Grote, SMITH, p. 59, Tr. Amer. ent. Soc. xxvii.
- Copibryophila* n. g., *Bryophilides*, for *C. angelica* n. sp., California, p. 416, SMITH, P. U. S. Mus. xxii.
- Corgatha quadricostaria* Walk. (as *Hyria?*), figure, note, *C. implexata* Walk. (as *Palara*), pl. i, fig. 26, *C. æqua* Walk. (as *Ausinsa*), pl. ii, fig. 18, *C. albicinctalis* Walk. (as *Zitna*), fig. 13, figures, SWINHOE, p. 69, Cat. Lep. Het. ii.
- Corgatha tana*, N. China, SWINHOE, p. 69, pl. ii, fig. 9, t. c. n. sp.
- C. fasciola*, Japan, LEECH, p. 512, Tr. ent. Soc. London 1900, n. sp.



- Cosmia notabilis* Walk. (as *Dorippa*), figure, pl. i, fig. 13, SWINHÖE, Cat. Lep. Het. ii.
- C. punctirena*, N. America, SMITH, p. 222, Canad. Ent. xxxii, n. sp.
- Cosmophila vitiensis*, pl. ix, fig. 12, p. 67, HAMPSON, Monogr. Christmas Island.
- Craniophora obscura*, China, LEECH, p. 107, Tr. ent. Soc. London 1900, n. sp.
- Crithote? prominens*, China, LEECH, p. 572, t. c. n. sp.
- Cucullia duplicata* var. *amæna*, pl. vi, fig. 17, p. 379, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii; *C. argentina* var. n. *achalina*, PÜNGELER, p. 120, op. cit. xiii.
- C. grisea*, China, LEECH, p. 99, Tr. ent. Soc. London 1900, n. sp.
- Cymatophora* n. sp., see *Geometridæ*.
- Dahlia* n. g. near *Helia*, for *D. hesperioides* n. sp., Bismarck Arch., PAGENSTECHER, p. 120, pl. i, fig. 13, Zoologica xxix.
- Dasycampa staudingeri*, characters and varr., OBERTHUR, p. 355, Bull. Soc. ent. France 1900.
- Daxata trisignata*, Madagascar, MABILLE, p. 734, Ann. Soc. ent. France lxviii, n. sp.
- Desana* n. g. for *Plusia peninsulata* Walk., SWINHÖE, p. 26, pl. i, fig. 12, Cat. Lep. Het. ii.
- Diallagma* n. g. *Eucalypterides*, for *D. lutea* n. sp., Florida, SMITH, p. 483, P. U. S. Mus. xxii.
- Didigua seticornis* Walk. (as *Nonagria*), figure, SWINHÖE, pl. iii, fig. 21, Cat. Lep. Het. ii.
- Diomea orbifera* Walk. (as *Zigera*), pl. iii, fig. 22, *absorbens* Walk. (as *Corsa*), fig. 14, figures, SWINHÖE, t. c.
- Diphthera marmorea*, p. 136, *vivida*, p. 137, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Drasteria conspicua*, Canada, SMITH, p. 224, Canad. Ent. xxxii, n. sp.
- Dyrzela poaphiloides* Walk. (as *Thermesia*), figure, pl. i, fig. 7, SWINHÖE, Cat. Lep. Het. ii.
- Egnasia minereusalis*, pl. iv, fig. 5, *celenoalis*, fig. 21, figures, SWINHÖE, t. c.
- E. macularia*, Mauritius, MABILLE, p. 734, Ann. Soc. ent. France lxviii; *E. manleyi*, Japan, LEECH, p. 609, Tr. ent. Soc. London 1900 : n. spp.
- Egryion* n. g. near *Trama*, p. 176, for *E. filaria* n. sp., Florida, p. 177, SMITH, J. N. York Ent. Soc. viii.
- Eleale plusioides*, figure, pl. ii, fig. 24, SWINHÖE, Cat. Lep. Het. ii.
- Elyra phlegeusalis*, pl. iii, fig. 15, *E. tespisalis* Walk. (as *Neviasca*), pl. iv, fig. 12, figures, SWINHÖE, t. c.
- Entomogramma bendoides* Walk. (as *Remigia*), pl. iii, fig. 8, *decernens* Walk. (as *Toxocampa*), fig. 19, figures, SWINHÖE, t. c.
- E. radiata*, Bismarck Arch., PAGENSTECHER, p. 108, Zoologica xxix, n. sp.
- Epizeuxis? nigellus*, Illinois, STRECKER, p. 36, Suppl. iii, n. sp.
- Erastria fasciana*, variation, *stygia* Butl. and *distinguenda* Staud. are synonyms of *fasciana*, LEECH, p. 140, Tr. ent. Soc. London 1900.
- E. quadrimacula*, S. Africa or Malay?, *acrochiona*, S. Africa, MABILLE, p. 729, Ann. Soc. ent. France lxviii; *E. nivata*, p. 141, *confusa*, p. 143, *E.? mandarina*, p. 145, China, LEECH, Tr. ent. Soc. London 1900; *E. griseomixta*, Christmas Is., HAMPSON, p. 68, pl. ix, fig. 5, Monogr. Christmas Island; *E. verecunda*, Bismarck Arch., PAGENSTECHER, p. 79, Zoologica xxix; *E. strigularia*, Florida, SMITH, p. 173, J. N. York Ent. Soc. viii : n. spp.
- Ercheia dubia*, pl. lx, fig. 13, SEMPER, Schmetterl. Philipp. ii.
- Eublemma roseonivea* Walk. (as *Acontia*), pl. i, fig. 11, *E. intractata* Walk. (as *Capnodes*), fig. 23, figures, SWINHÖE, Cat. Lep. Het. ii; *E.*, spp. feeding on *Coccidæ*, GREEN, p. 538, J. Bombay Soc. xiii; *E. amabilis*, larval habits, DUDGEON, p. 379, t. c.



- E. lurida*, Bismarck Arch., PAGENSTECHER, p. 84, pl. ii, fig. 43, Zoologica xxix, n. sp.
- Eulepa niveigutta*, figure, pl. i, fig. 21, SWINHÖE, Cat. Lep. Het. ii.
- Euplexia albomaculata*, pl. lx, fig. 2, SEMPER, Schmetterl. Philipp. ii.
- E. ochrargyra*, Madagascar, MABILLE, p. 727, Ann. Soc. ent. France lxviii ;  
*E. brunnea*, p. 83, *olivacea*, p. 84, China, LEECH, Tr. ent. Soc. London 1900 ; *E. spilophanes*, Tasmania, SWINHÖE, p. 21, pl. i, fig. 6, Cat. Lep. Het. ii : n. spp.
- Eurois pryori*, Japan, *munda*, p. 92, *hampsoni*, p. 93, *fulminea*, p. 94, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Eutelia vulgaris*, p. 731, *gilvicolor*, p. 732, E. Africa, MABILLE, Ann. Soc. ent. France lxviii ; *E. scelerata*, Buru, HOLLAND, p. 564, Nov. Zool. vii : n. spp.
- Fagitana obliqua*, Florida, SMITH, p. 174, J. N. York Ent. Soc. viii, n. sp.
- Felinia nigripalpis* Walk. (as *Toxocampa*), figure, pl. iii, fig. 12, SWINHÖE, Cat. Lep. Het. ii.
- Flammona quadrifasciata* Walk., figure, pl. i, fig. 24, SWINHÖE, t. c.
- F. trilineata*, China, LEECH, p. 562, Tr. ent. Soc. London 1900, n. sp.
- Fodina cuneigera*, larva, p. 566, pl. t, fig. 66, SEMPER, Schmetterl. Philipp. ii.
- Fruva apicella*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
- Gadirtha pulchra*, pl. lx, fig. 7, SEMPER, Schmetterl. Philipp. ii.
- G. exacta*, Philippines, SEMPER, p. 527, pl. lx, fig. 6, t. c. n. sp.
- Gariga argentilinea* Walk., figure, pl. viii, fig. 15, SWINHÖE, Cat. Lep. Het. ii.
- Gaurena gemella*, China, LEECH, p. 13, Tr. ent. Soc. London 1900, n. sp.
- Gespanna* n. g. for *Ginæa pectoralis* Walk., SWINHÖE, p. 162, Cat. Lep. Het. ii.
- Glottula dominica*, early stages, SEMPER, Schmetterl. Philipp. ii, pl. p, figg. 12-14 ; *G. pancrati*, larva, pl. xlix, figg. 17, 18, p. 317, FAWCETT, Tr. Zool. Soc. London xv.
- Gonitis editrix*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
- Gonodonta unica*, early stages, DYAR, p. 272, P. U. S. Mus. xxiii.
- Gortyna* and allies, historical synonymy, GROTE (537) ; *G. erepta*, noticed, GROTE, p. 107, Canad. Ent. xxxii.
- Gracilipalpus sublimbatus*, Centr. Asia, PÜNGELER, pl. ix, fig. 13, p. 294, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Grammodes cæca*, Bismarck Arch., PAGENSTECHER, p. 108, pl. i, fig. 12, Zoologica xxix ; *G. cooma*, Queensland, SWINHÖE, p. 158, Cat. Lep. Het. ii : n. spp.
- Graphiphora clava*, p. 38, *pallidula*, p. 39, *flavibrunnea*, p. 40, *tincta destituta*, p. 41, *mandarina*, p. 42, *nebula*, p. 43, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Gyrtona erebenna*, Madagascar, MABILLE, p. 731, Ann. Soc. ent. France lxviii, n. sp.
- Hadena culta* var. n. *subviolacea*, LEECH, p. 55, Tr. ent. Soc. London 1900 ; *H. illoba* Butl.=(*Mamestra declinans* Staud.), LEECH, p. 56, t. c. ; *H. subornata*, p. 342, pl. vii, fig. 11, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii ; *H. secalis*, *strigilis*, larval habits, REUTER, pp. 23-32, Acta Soc. Faun. Fenn. xix, No. 1 ; *H. ochroleuca*, hermaphrodites, SCHULTZ, p. 303, pl. vii, fig. 7, Deutsche ent. Zeitschr. Lep. xii.
- H. remota*, Centr. Asia, PÜNGELER, pl. ix, fig. 19, p. 294, t. c. ; *H. ? lama*, Centr. Asia, STAUDINGER, pl. vi, fig. 16, p. 370, t. c. ; *H. tenera*, Alaska, SMITH, p. 491, P. Washington Ac. ii ; *H. una*, Wisconsin, STRECKER, p. 32, Suppl. iii ; *H. cerivana*, Calgary, SMITH, p. 220, Canad. Ent. xxxii ; *H. tapeta*, p. 467, *luteocinerea*, p. 468, *mustelina*, p. 469, *jocasta*, *tela*, p. 470, N. America, SMITH, P. U. S. Mus. xxii : n. spp.

- Hecatera confusa*, China, LEECH, p. 96, Tr. ent. Soc. London 1900, n. sp.  
*Heliodes angelica*, p. 484, *restrictalis*, p. 485, California, SMITH, P. U. S. Mus. xxii, n. spp.  
*Heliophobus lama*, Centr. Asia, PÜNGELER, p. 293, pl. ix, fig. 8, Deutsche ent. Zeitschr. Lep. xii, n. sp.  
*Heliopsis separata* Walk., pl. lx, fig. 1, SEMPER, Schmetterl. Philipp. ii.  
*H. copiosa*, p. 23, *H. ? straminea*, p. 24, China, LEECH, Tr. ent. Soc. London 1900, n. sp.  
*Herchunda* n. g. for *Premusa hirtissima* Walk., SWINHOE, p. 592, Cat. Lep. Het. ii.  
*Herminia iridescens*, p. 151, *dormiens*, p. 152, Queensland, LUCAS, P. Soc. Queensland xv, n. spp.  
*Himella quadristigma*, Arizona, SMITH, p. 480, P. U. S. Mus. xxii, n. sp.  
*Homoptera duplicilinea* Walk. (as *Hadena*), figure, SWINHOE, pl. ii, fig. 17, Cat. Lep. Het. ii.  
*H. ? fasciata*, China, LEECH, p. 553, Tr. ent. Soc. London 1900, n. sp.  
*Homohadena candida*, Texas, SMITH, p. 478, P. U. S. Mus. xxii, n. sp.  
*Hyblæa puera*, early stages, SEMPER, p. 529, pl. q, figg. 15-17, Schmetterl. Philipp. ii. *Hyblæa*, see also *Bombyces*.  
*H. aterrima*, Buru, HOLLAND, p. 563, Nov. Zool. vii, n. sp.  
*Hydrillodes vexillifera*, Christmas Is., HAMPSON, p. 68, pl. ix, fig. 6, Monogr. Christmas Island, n. sp.  
*Hydræcia*, life-histories of N. American, BIRD, pp. 226-234 and 276-283, Canad. Ent. xxxii; *H.*, oviposition, BIRD, p. 209, J. N. York Ent. Soc. viii; *H. stramentosa*, notes on, MOFFAT, pp. 61-63, pl. ii, Canad. Ent. xxxii and GROTE, p. 119, t. c.; MOFFAT, p. 133, t. c.  
*Hyelopsis magna*, China, LEECH, p. 146, Tr. ent. Soc. London 1900, n. sp.  
*Hypatra includens*, larva and pupa, pl. s, figg. 14, 15, SEMPER, Schmetterl. Philipp. ii.  
*Hypena rhombalis* varr. n. *perspicua*, *obscura*, p. 657, LEECH, Tr. ent. Soc. London 1900; *H. obditalis*, larva, SWAINSON, p. 34, J. N. York Ent. Soc. viii.  
*Hypena albistriga*, E. Africa, MABILLE, p. 736, Ann. Soc. ent. France lxxviii; *H. incisa*, p. 655, *mandarina*, p. 658, *insolita*, p. 659, *confusa*, *inambitiosa*, p. 660, China, *H. ? bipartita*, Japan, *pectinata*, p. 661, *simplex*, p. 662, China, LEECH, Tr. ent. Soc. London 1900 : n. spp.  
*Hypocala holcona*, pl. lx, fig. 14, *violacea*, fig. 15, SEMPER, Schmetterl. Philipp. ii.  
*Ilurgis subsignata*, Madagascar, MABILLE, p. 735, Ann. Soc. ent. France lxxviii, n. sp.  
*Ingura tripartita*, Philippines, SEMPER, p. 532, pl. lx, fig. 8, and larva, pl. r, fig. 4, Schmetterl. Philipp. ii, n. sp.  
*Kakopoda* n. g. *Erebiinæ*, p. 175, for *K. cincta* n. sp., Florida, p. 176, SMITH, J. N. York Ent. Soc. viii.  
*Lacera alope*, larva, pl. r, fig. 18, SEMPER, Schmetterl. Philipp. ii.  
*Libisosa* Walk., valid, SWINHOE, p. 198, Cat. Lep. Het. ii.  
*Lineopalpa scitipennis* Walk. (as *Cosmophila*), figure, SWINHOE, pl. iii, fig. 18, t. c.; *L. fulvida*, larva and pupa, SEMPER, p. 537, pl. i, figg. 7, 8, Schmetterl. Philipp. ii.  
*Lophoptera albicans*, pl. ii, fig. 40, *mediopunctata*, *angusta*, Bismarck Arch., PAGENSTECHER, p. 92, Zoologica xxix, n. sp.  
*Leucania comma* var. n. *rhodocomma*, PÜNGELER, p. 120, Deutsche ent. Zeitschr. Lep. xiii.  
*L. mesotrosta*, Centr. Asia, PÜNGELER, pl. ix, fig. 9, p. 295, op. cit. xii; *L. opaca*, Centr. Asia, STAUDINGER, pl. vi, fig. 13, p. 374, t. c.; *L. proxima*, *nepos*, China, p. 100, *striata*, Japan, Loochoo, p. 127, *ferrilinea*, China, *pryeri*, Japan, p. 128, LEECH, Tr. ent. Soc. London 1900; *L. semicana*, Bismarck Arch. PAGENSTECHER, p. 75, pl. ii,

- fig. 37, Zoologica xxix; *L. stenographa*, S. Australia, LOWER, p. 30, P. Linn. Soc. N. S. Wales xxv; *L. sepulchralis*, Queensland, LUCAS, p. 149, P. Soc. Queensland xv; *L. velutina*, Florida, SMITH, p. 480, P. U. S. Mus. xxii: n. spp.
- Lyncestis amphix*, larva, SEMPER, p. 551, pl. R, fig. 11, Schmetterl. Philipp. ii.
- Lysimelia phineusalis*, pl. iv, fig. 14, *nothusalis*, fig. 15, *silvialis*, fig. 23, figures, SWINHOE, Cat. Lep. Het. ii.
- Macaldenia palumba*, larva and pupa, pl. s, figg. 3, 4, SEMPER, Schmetterl. Philipp. ii.
- Malialtha vialis* Moore (as *Acontia*), figure, pl. i, fig. 9, SWINHOE, Cat. Lep. Het. ii.
- Mamestra lauta*, Centr. Asia, PÜNGELER, p. 119, Deutsche ent. Zeitschr. Lep. xiii; *M. bryoptera*, pl. ix, fig. 6, *decreta*, fig. 7, Centr. Asia, PÜNGELER, p. 292, op. cit. xii; *M. eversmanni*, pl. vi, fig. 14, p. 367, *schneideri*, p. 368, Centr. Asia, STAUDINGER, t. c.; *M. negussa*, Calgary, SMITH, p. 219, Canad. Ent. xxxii; *M. tacoma*, Washington, STRECKER, p. 31, Suppl. iii; *M. senatoria*, p. 461, *rainierii*, p. 462, *bolteri*, p. 463, *yakima*, *dilatata*, p. 464, *florida*, p. 465, *roseosuffusa*, p. 466, *griseata*, p. 467, N. America, SMITH, P. U. S. Mus. xxii: n. spp.
- Marapana ilatana*, Buru, HOLLAND, p. 576, Nov. Zool. vii, n. sp.
- Mastigophorus ochreistigma*, *modesta*, *butleri*, p. 629, *nigristigmata*, p. 630, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Maxilua frontalis* Walk., figure, pl. ii, fig. 8, SWINHOE, Cat. Lep. Het. ii.
- Mecodina duplicata*, p. 592, *lankesteri*, *externa*, p. 593, *costimacula*, *ambigua*, p. 594, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Meliopsis ankara*, Quetta, SWINHOE, p. 311, Ann. Nat. Hist. vi; *M. argos*, Colombia, DRUCE, p. 520, Ann. Nat. Hist. v: n. spp.
- Mesoplectra? hampsoni*, China, LEECH, p. 618, Tr. ent. Soc. London 1900, n. sp.
- Metachrostis megalena*, S. Africa, MABILLE, p. 730, Ann. Soc. ent. France 1900; *M. chinensis*, p. 156, *brunnea*, p. 157, China, LEECH, Tr. ent. Soc. London 1900: n. spp.
- Metaptila? ptilomela*, Melbourne, LOWER, p. 31, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Metatypa sericina?*, Madagascar, MABILLE, p. 730, Ann. Soc. ent. France lxxviii, n. sp.
- Metopta* n. g. for *Spiramia rectifasciata* Mén., SWINHOE, p. 170, Cat. Lep. Het. ii.
- Micardia munda*, China, LEECH, p. 148, Tr. ent. Soc. London 1900, n. sp.
- Micræschus leptinia?*, Madagascar, MABILLE, p. 731, Ann. Soc. ent. France lxxviii, n. sp.
- Mixtila* n. n. for *Pinacia* Walk., SWINHOE, p. 193, Cat. Lep. Het. ii.
- Moma gracilis*, India, SWINHOE, p. 101, pl. iii, fig. 1, t. c. n. sp.
- Murgisa orgyoides*, figure, pl. iv, fig. 7, SWINHOE, t. c.
- Mythimna grandis* var. *n. curvata*, LEECH, p. 130, Tr. ent. Soc. London 1900.
- Nania typica* var. *n. issyca*, PÜNGELER, p. 119, Deutsche ent. Zeitschr. xiii.
- Naharra contracta*, figure, pl. iii, fig. 16, SWINHOE, Cat. Lep. Het. ii.
- Naranga cyclina*, p. 730, *nephelea*, *leptinia*, p. 731, Africa or Madagascar, MABILLE, Ann. Soc. ent. France lxxviii, n. spp.
- Narthecophora* n. g. near *Acopa*, p. 485, for *N. pulvereana* n. sp., Arizona, p. 486, SMITH, P. U. S. Mus. xxii.
- Nebrissa bimacula* Walk., figure, pl. i, fig. 22, SWINHOE, Cat. Lep. Het. ii.
- Nephelodes pectinatus*, British Columbia, SMITH, p. 221, Canad. Ent. xxxii, n. sp.
- Neostictoptera* n. g. for *N. nigropuncta* n. sp., Colombia, DRUCE, p. 519, Ann. Nat. Hist. v.



- Nodaria turpalis*?, Madagascar, MABILLE, p. 735, Ann. Soc. ent. France lxxiii; *N. tacta*, p. 574, *clathrata*, *rugosa*, p. 575, Buru, HOLLAND, Nov. Zool. vii; *N. annulata*, p. 632, *germana*, *angulina*, p. 633, *incerta*, *triplex*, p. 634, *centralis*, p. 637, *vermiculata*, p. 639, *paupercula*, *nigrisigma*, p. 640, *sinensis*, p. 641, *subnubila*, p. 642, *N.?* *alpherakyi*, *sordida*, p. 643, *punctilinea*, *angulata*, *mandarina*, p. 644, var. n. *pallens*, p. 645, China, LEECH, Tr. ent. Soc. London 1900; *N. porphyrialis*, Bismarck Arch., PAGENSTECHER, p. 119, Zoologica xxix : n. spp.
- Nyctipao pilosa*, China, LEECH, p. 548, Tr. ent. Soc. London 1900; *N. variegata*, Queensland, SWINHOE, p. 114, Cat. Lep. Het. ii : n. spp.
- Ochropleura subpurpurea*, p. 35, *mandarina*, p. 36, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Ommatostola popofensis*, Alaska, SMITH, p. 492, P. Washington Ac. ii, n. sp.
- Oncocnemis ciliata*, Colorado, SMITH, p. 478, P. U. S. Mus. xxii, n. sp.
- Ophideres jordani*, Buru, HOLLAND, p. 570, Nov. Zool. vii, n. sp.
- Ophiusa torrida*, pl. s, figg. 5-7, p. 558, *simillima*, figg. 8, 9, early stages, SEMPER, Schmett. Philipp. ii.
- O. swinhoei*, Philippines, SEMPER, p. 557, t. c.; *O. redunca*, Brisbane, SWINHOE, p. 141, cut, Cat. Lep. Het. ii : n. spp.
- Orrhodia torrida*, larva, WULLSCHLEGEL, p. 289, Mt. Schweiz. ent. Ges. x.
- Orthodes calceolaris*, Long Is., STRECKER, p. 33, Suppl. iii, n. sp.
- Orthogonia sera*, variation, varr. n. *grisea*, *plana*, LEECH, p. 50, Tr. ent. Soc. London 1900.
- Orthosia litura* var. n. *saturata*, SCHULTZ, p. 349, Illustr. Zeitschr. Ent. v; cf. TUTT, t. c. p. 383.
- O. jordana*, Jordan, STAUDINGER, pl. v, fig. 12, p. 376, Deutsche ent. Zeitschr. Lep. xii; *O. placata*, *conspicua*, p. 79, China, LEECH, Tr. ent. Soc. London 1900; *O. typhlopa*, S. Australia, LOWER, p. 30, P. Linn. Soc. N. S. Wales xxv : n. spp.
- Ortopla iarbassalis*, figure, pl. iii, fig. 4, SWINHOE, Cat. Lep. Het. ii.
- Oruza nigropunctata*, Bismarck Arch., PAGENSTECHER, p. 86, Zoologica xxix, n. sp.
- Oxænanus* n. g., p. 201, for part of *Mastigophorus*, with *O. kalialis* n. sp., Borneo, p. 202, SWINHOE, Cat. Lep. Het. ii.
- Oxyodes* (subg. n. *Rectipalpula*) for *O. billeti* n. sp., Tonkin, JOANNIS, p. 280, Bull. Soc. ent. France 1900.
- Oxythres* n. g. for *O. splendens* n. sp., Colombia, DRUCE, p. 517, Ann. Nat. Hist. v.
- Palada* n. g. *Heliothides*, p. 486, for *P. scarletina* n. sp., California, p. 487, SMITH, P. U. S. Mus. xxii.
- Palindira nicea*, *primulina*, Colombia, DRUCE, p. 518, Ann. Nat. Hist. v, n. spp.
- Palimpsestes brevis*, *brunnea*, China, LEECH, p. 18, Tr. ent. Soc. London 1900, n. spp.
- Palpangula?* *simiola*, Centr. Asia, PÜNGELER, pl. ix, fig. 12, p. 295, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Panilla costipunctata*, Japan, China, LEECH, p. 550, Tr. ent. Soc. London 1900, n. sp.
- Parora* n. g. *Erebiides*?, for *P. texana* n. sp., Texas, SMITH, p. 491, P. U. S. Mus. xxii.
- Penicillaria jocosatrix*, larva and pupa, pl. r, figg. 5, 6, *maculata*, larva, fig. 7, SEMPER, Schmett. Philipp. ii.
- P. vittalba*, Celebes, SEMPER, t. c. p. 534, pl. lx, fig. 9, n. sp.
- Peridroma incivis*, early stages, DYAR, p. 273, P. U. S. Mus. xxiii.
- Perigea lucetta*, p. 474, *cervina*, p. 475, *texana*, p. 476, *consors*, p. 477, N. America, SMITH, t. c. n. spp.



- Phlogophora subpurpurea*, p. 71, *fuscomarginata*, p. 72, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Phæbophilus turpis*, Thian Schan, STAUDINGER, pl. vii, fig. 8, p. 341, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Phyllodes punctifascia, dentilinea*, China, LEECH, p. 576, Tr. ent. Soc. London 1900, n. spp.
- Plecoptera nebulilinea* Walk. (as *Carteia*), SWINHOE, p. 150, Cat. Lep. Het. ii.
- P. antigona*, Buru, HOLLAND, p. 567, Nov. Zool. vii, n. sp.
- Plotheia celtis*, early stages, SEMPER, p. 529, pl. q, figg. 12-14, Schmetterl. Philipp. ii.
- Plumipalpia simplex*, China, LEECH, p. 646, Tr. ent. Soc. London 1900, n. sp.
- Plusia triplasia* var. *clarissa*, STAUDINGER, p. 381, Deutsche ent. Zeitschr. Lep. xii; *P. festuæ* var., ARKLE, p. 10, Entomologist xxxiii; *P. festuæ, contexta* and *putnami*, note, SNELLEN, pp. 46, 47, Verslag, Tijdschr. Ent. xliii; *P. chrysites* var. n. *disjuncta*, SCHULTZ, p. 349, Illustr. Zeitschr. Ent. v; cf. TUTT, t. c. p. 383.
- P. generosa*, Zeitun, STAUDINGER, pl. vi, fig. 8, p. 380, Deutsche ent. Zeitschr. Lep. xii; *P. hamptoni*, China, LEECH, p. 586, Tr. ent. Soc. London 1900; *P. chillagoes*, Queensland, LUCAS, p. 150, P. Soc. Queensland xv; *P. epsilon*, Alaska, OTTOLENGUI, p. 494, P. Washington Ac. ii : n. spp.
- Poeta denotalis* Walk., figure, pl. i, fig. 25, SWINHOE, Cat. Lep. Het. ii.
- Polia conspicua*, p. 94, *P. ? montana*, p. 95, China, LEECH, Tr. ent. Soc. London 1900; *P. extincta*, p. 471, *acera*, p. 472, *dispar*, p. 473, *ochracea*, p. 474, N. America, SMITH, P. U. S. Mus. xxii : n. spp.
- Polydesma glaucinans*, larva, pupa, pl. xlix, figg. 22, 23, p. 318, FAWCETT, Tr. Zool. Soc. London xv.
- P. staudingeri*, Corea, p. 551, *grisea*, Japan, China, p. 552, LEECH, Tr. ent. Soc. London 1900; *P. opala*, Bismarck Arch., PAGENSTECHER, p. 99, pl. ii, fig. 21, Zoologica xxix; *P. graphica*, Buru, HOLLAND, p. 566, Nov. Zool. vii : n. spp.
- Polyphænis sericata* var., FUCHS, p. 46, Jahrb. nassau. Ver. liii.
- Prodenia littoralis*, larva and pupa, pl. q, figg. 1-3, SEMPER, Schmetterl. Philipp. ii.
- Prospalta siderea*, p. 121, *contigua, parva*, p. 122, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Pseudaglossa butleri*, p. 616, *albomaculata, annulata*, p. 617, China, LEECH, t. c.; *P. antipodalis*, p. 573, *P. ? buruensis*, p. 574, Buru, HOLLAND, Nov. Zool. vii : n. spp.
- Pseudohadena minuta*, Centr. Asia, PÜNGELER, pl. ix, fig. 10, p. 293, Deutsche ent. Zeitschr. Lep. xii; *P. ? deceptrix*, Jordan, STAUDINGER, pl. v, fig. 15, p. 369, t. c. : n. spp.
- Pseudophia oppia*, p. 18, pl. i, fig. 1, *lineata*, p. 19, fig. 7, Somaliland, DRUCE, P. Zool. Soc. London 1900, n. spp.
- Pterochaeta* n. g. near *Thermesia*, for *P. dohertyi* n. sp., Buru, HOLLAND, p. 568, Nov. Zool. vii.
- Pterocyphophora hamptoni*, Philippines, pl. lx, fig. 16, p. 541, SEMPER, Schmetterl. Philipp. ii, n. sp.
- Pterogonia aurigutta* Walk. (as *Thalatta*), figure, pl. ii, fig. 7, SWINHOE, Cat. Lep. Het. ii.
- Ragana* n. g. for pt. of *Hydrillodes*, SWINHOE, p. 204, t. c.
- Ragonotia* n. g. near *Senta*, for *R. striata* n. sp., Amurland, pl. vi, fig. 15, p. 372, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii.
- Raparna didyma, confusa*, Madagascar, MABILLE, p. 734, Ann. Soc. ent. France lxviii; *R. costiplaga*, Buru, HOLLAND, p. 572, Nov. Zool. vii : n. spp.
- Rhanidophora enucleata*, W. Africa, MABILLE, p. 732, Ann. Soc. ent. France lxviii, n. sp.

*Rectipalpula* subg. n., cf. *Oxyodes*.

*Rema* n. g. for part of *Polydesma*, SWINHÖE, p. 121, Cat. Lep. Het. ii.

*Remigia frugalis*, larva, pl. 7, fig. 2, p. 565, SEMPER, Schmett. Philipp. ii; *R. latipes*, early stages, DYAR, p. 276, P. U. S. Mus. xxiii; larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.

*R. inferna*, p. 565, *propugnata*, China, *R.?* *conspicua*, Japan, p. 566, LEECH, Tr. ent. Soc. London 1900, n. spp.

*Renia sobrialis* and *larvalis* are seasonal forms, early stages, DYAR, pp. 280-282, P. U. S. Mus. xxiii.

*Rhesala inconcinnalis* Walk. (as *Bocana*), pl. iv, fig. 9, *signicosta* Walk. (as *Enea*), fig. 22, figures, SWINHÖE, Cat. Lep. Het. ii.

*Rhynchina mandarinialis*, p. 651, *biformatalis*, p. 652, China, LEECH, Tr. ent. Soc. London 1900, n. spp.

*Risoba obstructa*, early stages, SEMPER, pl. R, figg. 8-10, Schmett. Philipp. ii.

*Rivula subpunctata* Walk. (as *Cholimma*), figure, pl. i, fig. 20, SWINHÖE, Cat. Lep. Het. ii.

*R.?* *bilinealis*, China, LEECH, p. 159, Tr. ent. Soc. London 1900; *R. proleuca*, Buru, HOLLAND, p. 563, Nov. Zool. vii; *R. subrosea*, Bismarck Arch., PAGENSTECHER, p. 83, Zoologica xxix : n. spp.

*Sandava xylitis* (Meyr.), Queensland, SWINHÖE, p. 192, Cat. Lep. Het. ii, n. sp.

*Saragossa* n. g., p. 111, for *Mamestra?* (*Saragossa*) *seeboldi* n. sp., p. 109, Spain, STAUDINGER, Deutsche ent. Zeitschr. Lep. xiii.

*Schinia reniformis*, p. 487, *oculata*, *ciliata*, p. 488, N. America, SMITH, P. U. S. Mus. xxii, n. spp.

*Selicanis* n. g. *Orthosioides*, for *S. cinereola* n. sp., Colorado, SMITH, p. 481, t. c.

*Sesamia nonagrioides* var. *albiciliata*, natural history, ZEHNTNER (1427).

*Setagrotis quebecensis*, Canada, p. 417, *radiatus*, Nevada, p. 418, SMITH, P. U. S. Mus. xxii, n. spp.

*Silacida* n. g. for part of *Eutelia*, SWINHÖE, p. 86, Cat. Lep. Het. ii; *S. apicifascia*, pl. lx, fig. 10, SEMPER, Schmett. Philipp. ii.

*Simplicia tityusalis* Walk. (as *Bocana*), figure, pl. iv, fig. 19, SWINHÖE, Cat. Lep. Het. ii; *S. tityusalis*, referred to *Adrapsa*, t. c. p. 593.

*S. prætectata*, China, LEECH, p. 613, Tr. ent. Soc. London 1900, n. sp.

*Spectrophysa* n. g. *Focillidae*, p. 190, for *S. distorta* n. sp., Borneo, p. 191, SWINHÖE, Cat. Lep. Het. ii.

*Spintherops rasilis*, Centr. Asia, PÜNGELER, pl. iv, fig. 7, p. 120, Deutsche ent. Zeitschr. Lep. xiii, n. sp.

*Spodoptera mauritia*, larva [described in 1894 as that of *Laphygma flavi-maculata*], DYAR, p. 157, Canad. Ent. xxxii.

*Stadna* n. g. *Hypenidae*, p. 216, for *S. nigriplaga* n. sp., Borneo, p. 217, pl. iv, fig. 24, SWINHÖE, Cat. Lep. Het. ii.

*Staga* n. g. *Deltoide* near *Catada*, for *S. producta* n. sp., Madagascar?, MABILLE, p. 735, Ann. Soc. ent. France lxviii.

*Stenoloba*; not *Cymatophoridae* but *Sarrothripinae*, REBEL, p. 107, Deutsche ent. Zeitschr. Lep. xiii.

*Stictoptera chalybæa* Walk. (as *Gadirtha*), figure, SWINHÖE, pl. iii, fig. 9, Cat. Lep. Het. ii; *S. cucullioides*, pl. lx, fig. 11, *ferrifera*, fig. 12, SEMPER, Schmett. Philipp. ii.

*S. brunneipennis*, p. 564, *buruana*, *paranthyal*, p. 565, Buru, HOLLAND, Nov. Zool. vii, n. spp.

*Stiria consuela*, Arizona, STRECKER, p. 34, Suppl. iii, n. sp.

*Syneda mexicana* var. n. *alba*, STRECKER, p. 35, t. c.

*Synedoida subtermina*, California, SMITH, p. 492, P. U. S. Mus. xxii, n. sp.

*Sypna subsignata* Walk., figure, pl. iii, fig. 5, *S. achæoides* Walk. (as

- Elpia*, pl. iii, fig. 3, *S. subolivacea* Walk. (as *Cerbia*), pl. iv, fig. 3, figures, SWINHOE, Cat. Lep. Het. ii.
- S. samala*, Singapore, SWINHOE, p. 106, pl. iii, fig. 5, t. c.; *S. simplex*, p. 539, *sobrina*, p. 540, *albistigma*, p. 541, *plaga*, p. 542, *marginata*, p. 543, *postflavida*, *quadrinotata*, p. 544, *mandarina*, p. 545, China, LEECH, Tr. ent. Soc. London 1900 : n. spp.
- Sympis ochreobasis*, Bismarck Arch., PAGENSTECHER, p. 104, pl. ii, fig. 34, Zoologica xxix, n. sp.
- Teniocampa opima* var. n. *mediolugens*, SCHULTZ, p. 349, Illustr. Zeitschr. Ent. v; cf. TUTT, t. c. p. 383.
- Teniopyga sylvina*, larva, pupa, pl. xlix, figg. 10–12, p. 318, FAWCETT, Tr. Zool. Soc. London xv.
- Talapa? obliquilineata*, China, LEECH, p. 646, Tr. ent. Soc. London 1900, n. sp.
- Talariga capacior*, figure, pl. iv, fig. 4, SWINHOE, Cat. Lep. Het. ii.
- Tambana c-album*, China, LEECH, p. 525, Tr. ent. Soc. London 1900, n. sp.
- Tapinostola improba*, Thian Schan, STAUDINGER, p. 343, Deutsche ent. Zeitschr. Lep. xii; *T. taurica*, Marasch, STAUDINGER, p. 374, t. c. : n. spp.
- Tarache admetralis* Walk. (as *Pyralis*), figure, SWINHOE, pl. i, fig. 14, Cat. Lep. Het. ii.
- T. sublotia*, Madagascar, *decoripennis*, *costosa*, E. Africa, p. 728, *acontina*, Africa, p. 729, MABILLE, Ann. Soc. ent. France lxviii; *T.? tripartita*, China, LEECH, p. 149, Tr. ent. Soc. London 1900 : n. spp.
- Targalla obliquata* Walk. (as *Eutelia*), figure, pl. ii, fig. 6, SWINHOE, Cat. Lep. Het. ii.
- Telesilla pallida*, China, LEECH, p. 589, Tr. ent. Soc. London 1900, n. sp.
- Thalpochares wagneri* var. *ochreola*, STAUDINGER, p. 385, Deutsche ent. Zeitschr. Lep. xii.
- T. deserta*, Biskra, p. 383, *vestalis*, Dead Sea, p. 385, STAUDINGER, t. c. n. spp.
- Thargelia pusilla*, Centr. Asia, PÜNGELER, pl. iv, fig. 10, p. 118, Deutsche ent. Zeitschr. Lep. xiii, n. sp.
- Thermecia paucula*, larva, SWAINSON, p. 34, J. N. York Ent. Soc. viii.
- Thermesia clarilinea*, *juncitilinea*, Africa, MABILLE, p. 732, Ann. Soc. ent. France lxviii; *T. orientalis*, *mandarina*, *T.? butleri*, China, p. 570, *brunnea*, Japan, p. 571, LEECH, Tr. ent. Soc. London 1900; *T. lichenea*, Buru, HOLLAND, p. 569, Nov. Zool. vii : n. spp.
- Throana amyntoralis*, figure, pl. iv, fig. 20, SWINHOE, Cat. Lep. Het. ii.
- Thyas honesta*, larva and pupa, pl. s, figg. 12, 13, *indiscriminata*, larva and pupa, figg. 10, 11, p. 560, SEMPER, Schmetterl. Philipp. ii.
- Thyatira apicalis*, *flavimargo*, p. 11, *conspicua*, *ornata*, p. 12, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Tornacontia* n. g., p. 49, for *Tarache sutrix* Grote, and *T. megocula* n. sp., California, p. 58, SMITH, Tr. Amer. ent. Soc. xxvii.
- Trichopolia serrata*, Texas, SMITH, p. 479, P. U. S. Mus. xxii, n. sp.
- Trigonophora grumi* renamed *Blepharidia paspa*, PÜNGELER, p. 123, Deutsche ent. Zeitschr. Lep. xiii.
- Tripudia balteata*, p. 489, *luxuriosa*, p. 490, N. America, SMITH, P. U. S. Mus. xxii, n. spp.
- Trogacontia ruficeps* Walk. (as *Thermesia*), figure, pl. i, fig. 17, SWINHOE, Cat. Lep. Het. ii.
- Ugia disjungens*, figure, SWINHOE, p. 194, t. c.
- Uncula* n. g. near *Maliattha*, for *Hiccodia herbaria* Swinh., SWINHOE, p. 52, t. c.
- Urbona sublineata* Walk., figure, pl. ii, fig. 19, SWINHOE, t. c.
- Veia homopteroides*, figure, pl. ii, fig. 25, SWINHOE, t. c.
- Xanthia pallidago*, Zeitun, STAUDINGER, p. 377, Deutsche ent. Zeitschr.



- Lep. xii; *X. pulchella*, Vancouver, SMITH, p. 223, Canad. Ent. xxxii : n. spp.
- Xanthoptera lignigera* Walk. (as *Rusicada*), pl. i, fig. 8, *mansueta* Walk. (as *Daona*), fig. 18, figures, SWINHOE, Cat. Lep. Het. ii; *X. maculata*, Philippines, SEMPER, p. 522, pl. lx, fig. 3, and pl. r, figg. 16, 17, larva and pupa, Schmett. Philipp. ii.
- X.?* *cænogramma*, ?Madagascar, MABILLE, p. 730, Ann. Soc. ent. France lxviii; *X. univittata*, Bismarck Arch., PAGENSTECHER, p. 80, Zoologica xxix : n. spp.
- Xylina*: the North American revised, SMITH, pp. 1-46, pls. i-v, Tr. Amer. ent. Soc. xxvii.
- X. amanda*, p. 24, *emarginata*, *holocinerea*, p. 28, *puella*, p. 30, *winnipeg*, p. 31, *dilatocula*, p. 42, N. America, SMITH, t. c. n. spp.
- Xylophasia fasciata*, p. 68, *submarginata*, p. 69, *chinensis*, p. 70, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Zagira stragulata*, Bismarck Arch., PAGENSTECHER, p. 85, pl. ii, fig. 11, Zoologica xxix, n. sp.
- Zethes*; the following species of *Egnasia* of Walk. are referred to *Zethes* and figured, *athemonalis*, pl. iv, fig. 1, *hylaxalis*, pl. iii, fig. 20, *parsimonialis*, pl. iv, fig. 18, *aviusalis*, fig. 10, also *Z. metagona* Walk. (as *Thermesia*), fig. 2, SWINHOE, Cat. Lep. Het. ii.
- Zethes humilis*, Africa or Madagascar, MABILLE, p. 733, Ann. Soc. ent. France lxviii; *Z. lala*, Singapore, SWINHOE, p. 189, pl. iv, fig. 8, Cat. Lep. Het. ii; *Z. mandarina*, *cana*, p. 597, *trilineata*, p. 598, *dentilineata*, p. 599, *saucia*, p. 600, *squamea*, China, *umbrosa*, China, Japan, p. 601, *ingratata*, p. 602, *pulverea*, p. 603, *adusta*, p. 604, China, *parvula*, China, Japan, *ornata*, p. 605, *cinnamomea*, p. 606, *sordidata*, p. 607, *magna*, p. 608, China, LEECH, Tr. ent. Soc. London 1900; *Z. uncinata*, *angulata*, pl. ii, fig. 32, Bismarck Arch., PAGENSTECHER, p. 114, Zoologica xxix; *Z. grisea*, Buri, HOLLAND, p. 571, Nov. Zool. vii : n. spp.

## GEOMETRIDÆ, EPIPLEMIDÆ.

[Cf. BARRETT (72), BASTELBERGER (77, 79), BURROWS (204), DIETZE (319), DOGNIN (340, 341), DRUCE (348), DYAR (360), FUCHS (473), HAMPSON (547), HERZ (584), HOLLAND (595), HULST (623, 625, 627), KARSCH (680), KORB (758), LOWER (828, 829), LUCAS (832), MABILLE (843), MEYRICK (906), PAGENSTECHER (975), PETERSEN (993), PROUT (1057), PÜNGELER (1060), REBEL (1074), SCHRÖDER (1163), STAUDINGER (1269, 1270), SWINHOE (1298, 1299), WARREN (1375, 1376).]

British *Geometridæ*, BARRETT (72).

A large number of synonymical notes relating to N. American species, not recorded below, HULST (627).

Anatomy of ♂ genital armature of *Eupithecia innotata*, SCHRÖDER (1163).

*Abbotana clemataria*, life-history, DYAR, p. 142, Psyche ix.

*Abrazas marginata* var. n. *conflua*, arctic, STRAND, p. 225, Ent. Nachr. xxvi and Arch. Naturv. Christiania xxii, No. 5, p. 28.

*A. estriada*, Chiriqui, DOGNIN, p. 222, Ann. Soc. ent. Belgique xlv, n. sp.

*Acidalia aversata* var., FUCHS, p. 48, Jahrb. Nassau. Ver. liii.

*A. metohiensis*, Herzegovina, REBEL, p. 451, Verh. Ges. Wien 1; *A. subrufaria*, Algeria, p. 386, *subpurpurata*, pl. vi, fig. 19, Mardin, *sanctaria*, pl. v, fig. 6, p. 387, *sublongaria*, p. 388, Jordan, *allongaria*, *consociata*, pl. vi, fig. 10, p. 390, Mardin, *substrigaria*, N. E. Siberia, p. 391, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii; *A. rubrosignaria*, p. 737, *sparsipunctata*, *agrammaria*, Madagascar, *cuspidata*, *limbolata*,



- p. 738, *terrearia*, *rufolutaria*, Madagascar?, *holobapharia*, Madagascar, p. 739, MABILLE, Ann. Soc. ent. France lxviii; *A.*? *floccosa*, Bismarck Arch., PAGENSTECHER, p. 148, Zoologica xxix; *A. coercita*, p. 140, *vibrata*, *partita*, p. 141, Queensland, LUCAS, P. Soc. Queensland xv; *A. partita*, p. 215, *imitans*, *nubila*, *inficeta*, p. 216, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv: n. spp.
- Adelotypa xanthobrunnea* referred to *Limonia* (*Rhopalocera*), WARREN, p. 225, Nov. Zool. vii.
- Agathia benedicta*, Bismarck Arch., PAGENSTECHER, p. 152, pl. ii, fig. 39, Zoologica xxix, n. sp.
- Alcis argillacea*, Congo, WARREN, p. 95, Nov. Zool. vii; *A. nigrocuneata*, Sumatra, WARREN, p. 112, t. c.; *A. guttata*, N. America, HULST, p. 219, J. N. York Ent. Soc. viii: n. spp.
- Allophylla invasata* var. n. *perrupta*, WARREN, p. 132, Nov. Zool. vii.
- A. ambusta*, Venezuela, id., p. 131, t. c. n. sp.
- Amaurinia paraviolascens*, Ecuador, DOGNIN, p. 217, Ann. Soc. ent. Belgique xlv; *A. auruda*, Ecuador, DOGNIN, p. 443, t. c.: n. spp.
- Amblyodes* n. g. *Selidosemine*, p. 200, for *A. commixta*, n. sp., Ecuador, p. 201, WARREN, Nov. Zool. vii.
- Amelora tetraclada*, p. 406, *paronycha*, p. 407, N. S. Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Amphidasis betularius* doubledayaria in Germany, UFFELN, p. 67, Deutsche ent. Zeitschr. Lep. xiii.
- Anteia doddsiana*, Queensland, LUCAS, p. 149, P. Soc. Queensland xv, n. sp.
- Anteiois* n. g. for part of *Eois*, p. 146, with *A. mellea*, Brazil, *obliquaria*, Orinoco, *sulphuraria*, Ecuador, p. 147, n. spp., WARREN, Nov. Zool. vii.
- Antiptecta* n. g., *Epiplemidæ* near *Dirades*, for *A. pusilla* n. sp., Dominica, WARREN, p. 121, t. c.
- Anaxa kaluga*, Jaintia Hills, SWINHOE, p. 308, Ann. Nat. Hist. vi, n. sp.
- Anisodes urcearia* var. n. *diffusa*, WARREN, p. 146, Nov. Zool. vii.
- A. raspata*, *spatara*, p. 439, *suberca*, *punctigera*, p. 440, *fastidiosa*, p. 441, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv; *A. albipupillata*, S. America, *bipartita*, Colombia, *conferta*, Jamaica, p. 141, *costinotata*, Colombia, *ferruginata*, Ecuador, p. 142, *insignata*, Brit. Guiana, *lichenea*, Jamaica, *nigropustulata*, Brazil, p. 143, *ocularis*, Venezuela, *spissata*, Demerara, p. 144, *stramineata*, Ecuador, *subpallida*, Brazil, *subcarnearia*, with var. *grisea* Sao Paulo, p. 145, *tenera*, Rio Janeiro, p. 146, WARREN, Nov. Zool. vii: n. spp.
- Anisopera impostor*, Ecuador, *rectilinea*, Venezuela, WARREN, p. 207, Nov. Zool. vii, n. spp.
- Apicia præapicata*, Petropolis, WARREN, p. 208, t. c.; *A. venusta*, Ecuador, DOGNIN, p. 451, Ann. Soc. ent. Belgique xlv: n. spp.
- Aplodes malina* Butl. referred to *Hydata*, WARREN, p. 134, Nov. Zool. vii.
- A. pallida*, Bonaire Island, WARREN, p. 131, t. c. n. sp.
- Aplogompha oppletaria*, Ecuador, WARREN, p. 186, t. c. n. sp.
- Arhostia indecorata*, Simla, WARREN, p. 103, t. c. n. sp.
- Arrhodia fenestrata*, Queensland, LUCAS, p. 145, P. Soc. Queensland xv, n. sp.
- Asellodes*; referred to *Sterrhinae*, characters, WARREN, p. 148, Nov. Zool. vii.
- Asestra albitumida*, Ecuador, WARREN, p. 208, t. c. n. sp.
- Aspidoptera* n. g. *Monocteniidæ*, for *A. navigata*, p. 146, *ambiens*, p. 147, n. spp., Queensland, LUCAS, P. Soc. Queensland xv.
- Aspilates gilvaria* var., FUCHS, p. 56, Jahrb. nassau. Ver. liii.
- Astyochia nigrita*, Bolivia, WARREN, p. 187, Nov. Zool. vii, n. sp.
- Ateloptila confusa*, Queensland, WARREN, p. 112, t. c. n. sp.

- Aterpnodes* n. g., p. 208, *Ennominae*, for *A. geminipuncta*, n. sp., Costa Rica, p. 209, WARREN, t. c.
- Atyria subdichroa*, Ecuador, DOGNIN, p. 214, Ann. Soc. ent. Belgique xlv : *A. ? mamillifera*, Ecuador, WARREN, p. 125, Nov. Zool. vii : n. spp.
- Atyriodes parapostica*, Ecuador, DOGNIN, p. 214, Ann. Soc. ent. Belgique xlv, n. sp.
- Azata tenuilinea*, Penang, WARREN, p. 115, Nov. Zool. vii, n. sp.
- Azelina peplaria*, larva, CAUDELL, p. 583, Ent. News Philad. xi.
- A. elmonjensis*, p. 232, *munita*, p. 233, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv ; *A. dorsipunctata*, Venezuela, *incompta*, Bolivia, p. 209, *indistincta*, *subochreata*, with var. *nocturna*, p. 210, Colombia, *velutina*, Parana, p. 211, WARREN, Nov. Zool. vii : n. spp.
- Bapta bimaculata* var., FUCHS, p. 51, Jahrb. nassau. Ver. liii.
- Bapta perita*, p. 446, *admota*, p. 447, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv ; *B. erina*, Brazil, DRUCE, p. 525, Ann. Nat. Hist. v : n. spp.
- Bassodes æmonia*, Jamaica, DRUCE, p. 524, t. c. n. sp.
- Berta vaga* Walk. (as *Thalera*), figure, pl. vi, fig. 8, SWINHÖE, Cat. Lep. Het. ii.
- Biston hunii*, hybrids, OBERTHUR (952).
- Boarmia crepuscularia* var. n. *alba*, GAUCKLER, p. 371, Ent. Nachr. xxvi ; *B. acaciaria* larva, pl. xlix, fig. 24, p. 318, FAWCETT, Tr. Zool. Soc. London xv.
- B. tenuisaria*, Jordan, pl. v, fig. 3, *tenietaria*, pl. vi, fig. 1, p. 394, *fascinataria*, fig. 4, p. 395, Algeria, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii ; *B. præclarata*, Centr. Asia, PÜNGELER, pl. ix, fig. 18, p. 297, Deutsche ent. Zeitschr. Lep. xii ; *B. delatina*, Shan States, SWINHÖE, p. 308, Ann. Nat. Hist. vi ; *B. seotozonea*, Christmas Is., HAMPSON, p. 71, pl. ix, figg. 4, 15, Monogr. Christmas Island ; *B. submuscaria*, Bismarck Arch., PAGENSTECHER, p. 137, Zoologica xxix : n. spp.
- Brachybasis* n. g. *Epiplemidæ*, for *Decetia rufescens* Butl., SWINHÖE, p. 218, Cat. Lep. Het. ii.
- Brephoscotosia* ? characters amended, WARREN, p. 171, Nov. Zool. vii.
- Brochelia subalbida*, Surinam, WARREN, p. 194, t. c. n. sp.
- Broptera ustifumosa* referred to *Cymatophora*, WARREN, p. 196, t. c.
- B. subbrunnea*, Ecuador, WARREN, p. 194, t. c. n. sp.
- Bursada oblongata*, Dorey, SWINHÖE, p. 316, Cat. Lep. Het. ii, n. sp.
- Caberodes subochrearia*, New Jersey, HULST, p. 107, Canad. Ent. xxxii, n. sp.
- Calletera schistacea*, Sarawak, SWINHÖE, p. 309, Ann. Nat. Hist. vi, n. sp.
- Callipseustes* n. g. *Selidoseminæ*, p. 201, for *C. parambicola* n. sp., Ecuador, p. 202, WARREN, Nov. Zool. vii.
- Calocalpe rosenbergi*, Ecuador, WARREN, p. 172, t. c. n. sp.
- Calocampe undulata*, life history, DYAR, p. 9, Psyche ix.
- Calyptocome* n. g., type *Acidalia pannaria* Gn., with *C. roseoliva* n. sp., St. Vincent, WARREN, p. 148, Nov. Zool. vii.
- Cambogia versata*, Walk. (as *Hyria*), figure, pl. v, fig. 23, SWINHÖE, Cat. Lep. Het. ii.
- C. muscularia*, Bolivia, DOGNIN, p. 217, Ann. Soc. ent. Belgique xlv ; *C. seria*, p. 442, *acerba*, p. 443, Ecuador, DOGNIN, t. c. : n. spp.
- Campptogramma ? fœdata*, Ecuador, WARREN, p. 172, Nov. Zool. vii, n. sp.
- Carbia calescens*, figure, pl. v, fig. 15, SWINHÖE, Cat. Lep. Het. ii.
- Cartellodes ochrea*, Ecuador, WARREN, p. 212, Nov. Zool. vii, n. sp.
- Cataclysmæ ? napassa*, Ecuador, DOGNIN, p. 445, Ann. Soc. ent. Belgique xlv, n. sp.
- Certima sericea*, Bogotá, WARREN, p. 212, Nov. Zool. vii, n. sp.
- Chlenias serina*, N. S. Wales, LOWER, p. 36, P. Linn. Soc. N. S. Wales xxv ;

- C. sagittaria*, Queensland, LUCAS, p. 148, P. Soc. Queensland xv : n. spp.
- Chogada perlepidaria*, Queensland, WARREN, p. 112, Nov. Zool. vii, n. sp.
- Cidaria autumnalis* var. n. *constricta*, STRAND, p. 32, Arch. Naturv. Christiania, xxii, No. 5; *C. truncata* var., p. 57, *ferrugata* var., *dilutata* varr., p. 58, *lugubrata* var., p. 60, *hastata* var., p. 61, FUCHS, Jahrb. nassau. Ver. liii; *C. picata* var. n. *albofasciata*, GAUCKLER, p. 371, Ent. Nachr. xxvi; *C. flavicinctata* var. *relegata*, *C. vitalbata* var. *detersata*, PÜNGELER, p. 299, Deutsche ent. Zeitschr. Lep. xii.
- C. variolata*, Algeria, STAUDINGER, p. 399, pl. vi, fig. 2, Deutsche ent. Zeitschr. Lep. xii; *C. ? uncinata*, Centr. Asia, PÜNGELER, pl. iv, fig. 3, p. 121, Deutsche ent. Zeitschr. Lep. xiii; *C. nanula*, Madagascar?, MABILLE, p. 737, Ann. Soc. ent. France lxviii; *C. sagittatoides*, Bismarck Arch., PAGENSTECHER, p. 144, pl. i, fig. 5, Zoologica xxix; *C. subalbata*, Colombia, *simplex*, Ecuador, DOGNIN, p. 445, Ann. Soc. ent. Belgique xlv : n. spp.
- Cidariophanes indentata*, p. 202, *perrubescens*, p. 203, Bolivia, WARREN, Nov. Zool. vii; *C. incondita*, Ecuador, DOGNIN, p. 449, Ann. Soc. ent. Belgique xlv : n. spp.
- Cimelia olga*, Transcaucasus, STAUDINGER, p. 398, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Cirsodes mosticana*, Ecuador, DOGNIN, p. 226, Ann. Soc. ent. Belgique xlv, n. sp.
- Clysia optima*, Bolivia, DOGNIN, p. 226, t. c. n. sp.
- Cnemodes dentilinea*, Ecuador, WARREN, p. 149, Nov. Zool. vii, n. sp.
- Cnephora* n. g. type *Azelina griseata* Mssn., WARREN, p. 212, t. c.
- Cæluromima* n. g., *Epiplemide*, for *C. subfasciata* n. sp., Ecuador, WARREN, p. 122, t. c.
- Cænocalpe cænonymphata*, California, HULST, p. 104, Canad. Ent. xxxii, n. sp.
- Comostola dyakaria*, Walk. (as *Eucrostis*), figure, pl. vi, fig. 9, SWINHOE, Cat. Lep. Het. ii.
- Craspedia furfurata* var. n. *snbcarnea*, WARREN, p. 104, Nov. Zool. vii; *C. usticinctaria* Walk. (as *Acidalia*), fig., pl. v, fig. 24, SWINHOE, Cat. Lep. Het. ii.
- C. planipennis*, Sierra Leone, *rufinubes*, Unyoro, WARREN, p. 91, Nov. Zool. vii; *C. compressaria*, Bali, p. 103, *cretata*, Sula Mangoli, *margari-taria*, Celebes, *rufimixtaria*, Tenimber Islands, p. 104, *undilinea*, Lifu, p. 105, WARREN, t. c.; *C. taciturna*, Ecuador, DOGNIN, p. 444, Ann. Soc. ent. Belgique xlv; *C. approbata*, Carupano, *chlorochrea*, Parana, p. 149, *consobrinata*, Orinoco, *flexistrigata*, Brazil, *rasa*, Venezuela, p. 150, *rostrilinea*, Colombia, *unicornata*, Brazil, p. 151, *uniformata*, Trinidad, *viridipunctata*, Brazil, p. 152, WARREN, Nov. Zool. vii : n. spp.
- Craspedosis norbeata*, Buru, p. 312, *morotai*, Morty, p. 313, SWINHOE, Cat. Lep. Het. ii, n. spp.
- Cratoptera vilaria* = (*Cimicodes primularia*), var. n. *obscurata*, WARREN, p. 213, Nov. Zool. vii.
- Crypstylia* n. g., type *Acidalia quinquelineata* Dogn., WARREN, p. 152, t. c.
- Cryptoloba etaina*, Khasia Hills, SWINHOE, p. 310, Ann. Nat. Hist. vi, n. sp.
- Cusiala bistonaria* Walk. (as *Boarmia*), pl. v, fig. 5, *decursaria*, fig. 3, figg., SWINHOE, Cat. Lep. Het. ii.
- Cyclomia costipuncta* var. n. *ocellata*, WARREN, p. 213, Nov. Zool. vii.
- C. alternata*, Bahamas, *bellula*, Carupano, p. 213, *fulvimacula*, Ecuador, *rubida*, Rio Janeiro, p. 214, WARREN, t. c. n. spp.
- Cyllopoda attenuata*, Sao Paulo, *nanipennis*, Ecuador, WARREN, p. 125, Nov. Zool. vii, n. spp.



- Cymatophora evagaria*, Ontario, HULST, p. 106, Canad. Ent. xxxii; *C. virginalis, deleta*, N. America, HULST, p. 218, J. N. York Ent. Soc. viii; *C. apicalis*, Parana, *C. ? commaculata*, Ecuador, p. 195, *C. ochracea*, Panama, *paraphiata*, Brit. Guiana, p. 196, WARREN, Nov. Zool. vii: n. spp.
- Cyphopora* n. g., *Cyllopodinæ*, p. 125, for *C. dubia* n. sp., Ecuador, p. 126, WARREN, t. c.
- Cysteophora* n. g., for *C. pervertipennis* n. sp., Florida, HULST, p. 215, J. N. York Ent. Soc. viii.
- Darna marginata*, Venezuela, WARREN, p. 126, Nov. Zool. vii, n. sp.
- Decetia dichromata*, fig., pl. v, fig. 1, SWINHOE, Cat. Lep. Het. ii.
- Deilinia sericea* referred to *Nipteria*, WARREN, p. 190, Nov. Zool. vii.
- D. solamata*, Winnipeg, HULST, p. 217, J. N. York Ent. Soc. viii, n. sp.
- Deinoptila* n. g., type *Cidaria penicula* Dogn., WARREN, p. 172, Nov. Zool. vii.
- Diastictis epidesma*, S. Australia, LOWER, p. 405, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Dichorda* n. g., type *Geometra iridaria* Gu., with *D. allineata* n. sp., Venezuela, WARREN, p. 132, Nov. Zool. vii.
- Dichostrepsia* merged in *Stenele*, WARREN, p. 192, t. c.
- Dichromatopodia deflexa*, Venezuela, WARREN, p. 152, t. c. n. sp.
- Dichromodes steropias* var. n. *nexistriga*, WARREN, p. 101, t. c.
- D. subdentata*, fig., pl. v, fig. 9, SWINHOE, Cat. Lep. Het. ii.
- D. infans*, Jamaica, WARREN, p. 122, Nov. Zool. vii, n. sp.
- Dithecodes* n. g. *Geometrinæ*, for *D. erasa* n. sp., Japan, WARREN, p. 102, t. c.
- Dolichopyge* n. g., *Hydriomeninæ*, for *D. bifasciata* n. sp., Parana, WARREN, p. 173, t. c.
- Drucia* n. g. for *Racheospila asmura* Druce and *D. delphinata* n. sp., Sao Paulo, WARREN, p. 133, t. c.
- Duliophyle agitata* var. n. *diluta*, WARREN, p. 113, t. c.
- Dysephyra errabunda, noverca*, p. 441, *subrosea*, p. 442, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv, n. spp.
- Dysphania magnifica*, Queensland, SWINHOE, p. 377, Cat. Lep. Het. ii, n. sp.
- Ectropidia exprimata* Walk. (as *Acidalia*), fig., pl. v, fig. 11, SWINHOE, t. c.
- E. fimbripedata*, Perak, WARREN, p. 113, Nov. Zool. vii, n. sp.
- Ectropis subrugata* Walk. (as *Tephrosia*), pl. v, fig. 12, *decursaria* Walk. (as *Tephria*), fig. 21, figg., SWINHOE, Cat. Lep. Het. ii.
- E. hieroglyphica*, p. 33, *plectroneura*, p. 34, New South Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Egea pellucida*, Altai, STAUDINGER, p. 396, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Enconista miniosaria*, variation, JOANNIS, pp. 189–191, cuts, Bull. Soc. ent. France 1900.
- Eois*; erroneous application, WARREN, p. 146, Nov. Zool. vii; *E. suavata*, life-history, DYAR, p. 106, Psyche ix.
- E. macrostyla*, E. Africa, *sublimbaria*, S. Africa, WARREN, p. 92, Nov. Zool. vii; *E. carneofasciata*, Java, p. 105, *ferrilinea, fucosa*, Queensland, *glabripennis*, Java, p. 106, WARREN, t. c.; *E. crossii, purpurascens*, Florida, HULST, p. 105, Canad. Ent. xxxii; *E. suavata, micropterata*, Florida, HULST, p. 217, J. N. York Ent. Soc. viii: n. spp.
- Epicimelia* n. g. for *E. theresie* n. sp., pl. vii, figg. 5, 6, n. sp., Centr. Asia, KORB, p. 301, Deutsche ent. Zeitschr. Lep. xii.
- Epicosymbia conspersa*, Sumba, WARREN, p. 107, Nov. Zool. vii, n. sp.
- Epiplema nivosaria* Walk. (as *Erosia*), fig., pl. v, fig. 8, SWINHOE, Cat. Lep. Het. ii; *E. inhians*, pl. ix, fig. 2, p. 72, HAMPSON, Monogr. Christmas Island.



- E. basipuncta*, *bellissima*, Penang, WARREN, p. 101, Nov. Zool. vii; *E. kohistaria*, Andaman Islands, SWINHÖE, p. 307, Ann. Nat. Hist. vi; *E. lacteata*, p. 577, *buruana*, p. 578, Buru, HOLLAND, Nov. Zool. vii; *E. rufula*, Ecuador, WARREN, p. 123, Nov. Zool. vii : n. spp.
- Epirrhoe corrivulata*, Parana, p. 173. *imbecillata*, Bolivia, p. 174, *rufilineata*, Ecuador, *subpulchrata*, Bolivia, p. 175, WARREN, t. c. n. spp.
- Erateina herbertina*, *aïda*, p. 221, *delineata*, p. 222, Bolivia, DOGNIN, Ann. Soc. ent. Belgique xlv; *E. subtristata*, Bolivia, DOGNIN, p. 446, t. c. : n. spp.
- Eriopygidia* n. g., p. 175, type *Eucosmia angustaria* H.-S., with *E. olivata*, Jamaica, *semirubra*, Bolivia, n. spp., p. 176, WARREN, Nov. Zool. vii.
- Erschoffia* n. n. for *Eversmannia* Ersch., p. 221, *E. candidaria*, pl. v, fig. 18, *biplegata*, fig. 19, figg., SWINHÖE, Cat. Lep. Het. ii.
- Erythrolophus bicolor*, Loja, DOGNIN, p. 444, Ann. Soc. ent. Belgique xlv, n. sp.
- Euacidalia germana*, with var. *obscura*, Jamaica, WARREN, p. 153, Nov. Zool. vii, n. sp.
- Eucrestus* n. g. for *E. nobilitans*, *patrocinatus*, n. spp., Queensland, LUCAS, p. 142, P. Soc. Queensland xv.
- Euchlena abnormalis*, Winnipeg, HULST, p. 220, J. N. York. Ent. Soc. viii, n. sp.
- Euchleana serrata*, life-history, DYAR, pp. 130–132, Psyche ix.
- Euchloris aurigera*, Bismarck Arch., PAGENSTECHER, p. 155, Zoologica xxix, n. sp.
- Eucosmia pravata*, Bolivia, DOGNIN, p. 444, Ann. Soc. ent. Belgique xlv, n. sp.
- Eucrostis rufostellata*, p. 740, *rufocellata*, *lilliputaria*, p. 741, Madagascar, MABILLE, Ann. Soc. ent. France lxxviii, n. spp.
- Eudule circumducta*, Ecuador, WARREN, p. 185, Nov. Zool. vii, n. sp.
- Euephyra subsimilis*, Ecuador, WARREN, p. 153, t. c. n. sp.
- Eugonobapta brunneolineata*, Florida, HULST, p. 218, J. N. York Ent. Soc. viii, n. sp.
- Euperizoma* n. g. near *Perizoma*, for *E. nubicincta*, n. sp., Costa Rica, WARREN, p. 177, Nov. Zool. vii.
- Eupithecia carpophagata*?, life-history, pp. 95–101, pl. i, *E. undata* Fr. = (*scriptaria* H.-S.), p. 101, DIETZE, Deutsche ent. Zeitschr. Lep. xiii; *E. silenata* var., p. 63, *chloerata* var., p. 65, *exiguata* food-habits, p. 66, FUCHS, Jahrb. nassau. Ver. liii; *E. ericeata*, *millierata* and allies, synonymy, BASTELBERGER, pp. 129, etc., Illustr. Zeitschr. Ent. v; *E. rectangulata*, larval habits, BROWN, p. xi, Pr.-verb. Soc. Bordeaux lv.
- E. brunneata*, Mardin, STAUDINGER, pl. v, fig. 11, p. 400, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Eusarca subfasciata* var. n. *crocea*, WARREN, p. 215, Nov. Zool. vii.
- E. multilinea*, Venezuela, p. 214, *umbrilineata*, p. 215, Brazil, WARREN, t. c. n. sp.
- Eusenea rotundata*, Venezuela, WARREN, p. 215, t. c. n. sp.
- Fidonia acuta*, Cape of Good Hope, WARREN, p. 96, Nov. Zool. vii; *F. marginata*, Venezuela, WARREN, p. 199, t. c. : n. spp.
- Fisera perplexata*, fig., pl. vii, fig. 3, SWINHÖE, Cat. Lep. Het. ii.
- Galanageia* n. g. *Monocteniida*, p. 147, for *G. quadrigramma* n. sp., Queensland, p. 148, LUCAS, P. Soc. Queensland xv.
- Gastrina denticulata*, Tasmania, pl. iv, fig. 25, p. 278, SWINHÖE, Cat. Lep. Het. ii, n. sp.
- Gelasma discipennata* Walk. (as *Thalera*), fig., pl. vi, fig. 6, SWINHÖE, t. c.
- G. hemithearia*, Brazil, WARREN, p. 133, Nov. Zool. vii, n. sp.
- Gnophos desparatoria*, Tsyyl Jast, p. 54, *lutipennaria*, Sining Tebet, p. 56, FUCHS, Jahrb. nassau. Ver. liii, n. spp.

- Gonodela siennata*, Niger, WARREN, p. 95, Nov. Zool. vii, n. sp.  
*Graphipidus? pilosa*, Ecuador, DOGNIN, p. 444, Ann. Soc. ent. Belgique xlv, n. sp.  
*Gymnoscelis derogata* Walk. (as *Eupithecia*), fig., SWINHÖE, p. 350, Cat. Lep. Het. ii.  
*Gypsochroa hesitata*, life-history, DYAR, p. 59, Psyche ix.  
*Hadesina* n. g., *Cyllopodinae*, p. 126, for *H. limbaria* n. sp., Ecuador, p. 127, WARREN, Nov. Zool. vii.  
*Hæmalea circumducta*, Venezuela, p. 153, *minuta*, S. America, *pennumbra*, Dominica, *perlata*, St. George's, p. 154, *straminea*, Ecuador, p. 155, WARREN, t. c. n. spp.  
*Halophanes* n. g., *Geometrinae*, p. 102, for *Maxates xanthochlora* Swinh., WARREN, t. c.  
*Hammaptera? caliginosa*, Ecuador, p. 177, *H. tenera*, with var. *griselda*, S. America, p. 178, WARREN, t. c.; *H. cinerascens*, Ecuador, *colombaria*, Colombia, DOGNIN, p. 218, Ann. Soc. ent. Belgique xlv : n. spp.  
*Hasodima dardania*, p. 521, *salapia*, Colombia, *puta*, Bolivia, p. 522, DRUCE, Ann. Nat. Hist. v; *H.? incongruata*, Bogotá, WARREN, p. 216, Nov. Zool. vii : n. spp.  
*Hastina ternura*, Ecuador, DOGNIN, p. 446, Ann. Soc. ent. Belgique xlv, n. sp.  
*Heliothea iliensis* var. n. *herzi*, HERZ, p. 456, Annuaire Mus. St. Petersb. v.  
*Hemitha vernaria*, synonymy, PROUT, p. 181, Ent. Rec. xii.  
*H. dentata*, ? Madagascar, MABILLY, p. 740, Ann. Soc. ent. France lxviii, n. sp.  
*Herbita capona*, Brazil, DOGNIN, p. 229, Ann. Soc. ent. Belgique xlv; *H. flavidiscata*, Ecuador, WARREN, p. 216, Nov. Zool. vii : n. spp.  
*Heterophya distinctata*, Dominica, *fuscicosta*, Ecuador, p. 155, *fuscidiscaria*, Brazil, *illimitata*, Ecuador, p. 156, WARREN, Nov. Zool. vii, n. spp.  
*Heterostegane semifasciata*, Buru, WARREN, p. 111, t. c. n. sp.  
*Heterusia magnifica*, Bolivia, *obliquistriga* (no loc.), WARREN, p. 185, t. c. n. spp.  
*Heterusia barbara*, *morena*, p. 219, *copela*, Ecuador, *dilectaria*, Colombia, p. 220, DOGNIN, Ann. Soc. ent. Belgique xlv, n. spp.  
*Hibernia rupicaprararia* var., FUCHS, p. 52, Jahrb. nassau. Ver. liii.  
*Holoterpna* n. g., for *H. diagrapharia*, pl. ix, fig. 14, n. sp., Centr. Asia, PÜNGELER, p. 296, Deutsche ent. Zeitschr. Lep. xii.  
*Hyalocampa* n. g. *Nephodiinae*, for *H. specularis* n. sp., Ecuador, WARREN, p. 187, Nov. Zool. vii.  
*Hydriomena amorata*, California, HULST, p. 104, Canad. Ent. xxxii; *H. prælatata*, p. 178, *premundata*, p. 179, Bolivia, WARREN, Nov. Zool. vii : n. spp.  
*Hygrochroa clota*, Colombia, DRUCE, p. 521, Ann. Nat. Hist. v, n. sp.  
*Hymenonima camerata*, Ecuador, WARREN, p. 197, Nov. Zool. vii, n. sp.  
*Hypphyra etawa*, Jaintia Hills, SWINHÖE, p. 308, Ann. Nat. Hist. vi, n. sp.  
*Hyphedyle albimacula*, Ecuador, WARREN, p. 124, Nov. Zool. vii, n. sp.  
*Hypoplectis adpersaria* Hb., early stages, UFFELN, pp. 64-66, Deutsche ent. Zeitschr. Lep. xiii.  
*Hyposidra leucomela* var. n. *nigrata*, WARREN, p. 116, Nov. Zool. vii.  
*Hyria quadricostaria* Walk., cf. *Noctuidæ*, *Corgatha*.  
*Hyriogona* n. g., near *Heterophya*, p. 156, for *H. capitata*, Brazil, *fimbriata*, Ecuador, n. spp., p. 157, WARREN, Nov. Zool. vii.  
*Induna curvimargo*, Zambesi, WARREN, p. 92, t. c. n. sp.  
*Iodis vernaria*, synonymy, PROUT, p. 180, Ent. Rec. xii.  
*I.? longipalpis*, Venezuela, WARREN, p. 133, Nov. Zool. vii, n. sp.

- Ira subcostata*, Ecuador, WARREN, p. 217, t. c.; *I. marmorata*, p. 227, *subapicalis*, p. 228, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv : n. spp.
- Ischnopteris chryses* var. n. *dispar*, WARREN, p. 203, Nov. Zool. vii.
- Isochromodes dispar*, Ecuador, WARREN, p. 217, t. c. n. sp.
- Isoplenia albivertex*, Natal, WARREN, p. 93, t. c. n. sp.
- Larentia pauletina*, Ecuador, DOGNIN, p. 217, Ann. Soc. ent. Belgique xlv, n. sp.
- Lathochlora* n. g., *Geometrinæ*, p. 90, for *L. inornata* n. sp., Niger, p. 91, WARREN, Nov. Zool. vii.
- Lepiodes exilis*, Venezuela, WARREN, p. 197, t. c. n. sp.
- Leptoctenista subrufa*, Ecuador, WARREN, p. 124, t. c. n. sp.
- Leptomeris hypocallista*, S. Australia, LOWER, p. 405, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Leuconotha subfumida*, Venezuela, WARREN, p. 123, Nov. Zool. vii, n. sp.
- Leucoxena* n. g. *Astheninæ*, for *L. lactea* n. sp., E. Africa, WARREN, p. 94, t. c.
- Lissocharis* n. g. *Nephodiinæ*, for *L. nigrivenata* n. sp., Ecuador, WARREN, p. 188, t. c.
- Lissochlora* n. g., p. 134, type *Aplodes flavifimbria* Warr., with *L. incognita* n. sp., S. America, p. 135, WARREN, t. c.
- Lissopsis dukinfieldi*, Parana, WARREN, p. 171, t. c. n. sp.
- Lobophora coartata*, Centr. Asia, PÜNGELER, pl. ix, fig. 17, p. 298, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Lobopola* n. g., type *Boarmia cimarrona* Dogn., WARREN, p. 203, Nov. Zool. vii.
- Longipalpa* n. g. near *Abra-cas*, for *L. circumducta*, n. sp., Bismarck Arch., PAGENSTECHER, p. 143, Zoologica xxix.
- Lophochlora cristifera* Walk. (as *Thalera*), fig., pl. vi, fig. 5, SWINHOE, Cat. Lep. Het. ii.
- Lophocrita undifera* Walk. (as *Thalera*), fig., pl. vi, fig. 10, SWINHOE, t. c.
- Loxaspilates torcida*, Ecuador, DOGNIN, p. 449, Ann. Soc. ent. Belgique xlv, n. sp.
- Luxiaria euchlorata*, Buru, HOLLAND, p. 579, Nov. Zool. vii, n. sp.
- Lygris populata* var. n. *lutea*, STRAND, p. 31, Arch. Naturv. Christiania xxii, No. 5, and p. 225, Ent. Nachr. xxvi.
- Macaria albogrisearia*, Madagascar?, MABILLE, p. 736, Ann. Soc. ent. France lxviii; *M. albapicaria*, Buru, HOLLAND, p. 579, Nov. Zool. vii; *M. atomaria*, Bismarck Arch., PAGENSTECHER, p. 132, Zoologica xxix : n. spp.
- Macroneurodes* n. g. *Cyllopodinæ*, for *M. albimacula*, n. sp., Bogotá, WARREN, p. 127, Nov. Zool. vii.
- Maidana* n. g. for *Macaria tetragonata* Walk., SWINHOE, p. 280, Cat. Lep. Het. ii.
- Mecoceras nitocris*, life-history, DYAR, p. 69, Psyche ix.
- Melinodes furca*, Bogotá, WARREN, p. 218, Nov. Zool. vii, n. sp.
- Mesoleuca niveifasciata*, N. America, HULST, p. 216, J. N. York Ent. Soc. viii, n. sp.
- Metrocampa margaritata*, synonymy, PROUT, p. 180, Ent. Rec. xii.
- Microbiston tartaricus*, figure, STAUDINGER, pl. vii, fig. 12, Deutsche ent. Zeitschr. Lep. xii.
- M. turanicus*, Centr. Asia, id. p. 393, t. c. n. sp.
- Microgonia apidania* var. n. *caliginosa*, WARREN, p. 218, Nov. Zool. vii.
- M. olivata*, with var. *terrosa*, Bolivia, DOGNIN, p. 227, Ann. Soc. ent. Belgique xlv; *M. insolita*, Colombia, WARREN, p. 218, Nov. Zool. vii : n. spp.
- Microloxia delucida*, p. 135, *apicata*, p. 136, Brazil, WARREN, t. c. n. spp.
- Microxydia brunnea*, Jamaica, WARREN, p. 219, t. c. n. sp.



- Mimocharis* n. g. type *Heterusia mosgala* Th.-Mg., WARREN, p. 200, t. c.  
*Micropsis* ? *casta*, Peru, p. 219, *pallidaria*, Bolivia, p. 220, WARREN, t. c. n. spp.  
*Mnesithetis* n. g. (Warren) for *Hemithea idæa* Sw., SWINHÖE, p. 370, Cat. Lep. Het. ii.  
*Mononipta* ? *semitugens*, Bolivia, WARREN, p. 128, Nov. Zool. vii, n. sp.  
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*Myrioblephara pustulata*, Penang, WARREN, p. 114, Nov. Zool. vii, n. sp.  
*Nadagara scitilineata*, figure, pl. v, fig. 10, SWINHÖE, Cat. Lep. Het. ii.  
*N. obrussata*, Buri, HOLLAND, p. 578, Nov. Zool. vii, n. sp.  
*Narragodes* n. g. *Fidoninae* for *N. fuscata* n. sp., Brazil, WARREN, p. 200, t. c.  
*Nelo divisa*, Ecuador, WARREN, p. 192, t. c. n. sp.  
*Nematocampa decolorata*, Parana, WARREN, p. 220, t. c. n. sp.  
*Nemoria viridata*, synonymy, PROUT, p. 182, Ent. Rec. xii ; *N. albicinctaria* Walk. (as *Geometra*), figure, pl. vi, fig. 7, SWINHÖE, Cat. Lep. Het. ii.  
*N. dyarii*, N. America, HULST, p. 105, Canad. Ent. xxxii ; *N. nigroapicalis*, Colombia, DOGNIN, p. 439, Ann. Soc. ent. Belgique xlv : n. spp.  
*Neochrysa* n. g., p. 157, near *Heterephyra*, for *N. comosa* n. sp., Brazil, p. 158, WARREN, Nov. Zool. vii.  
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*Numeria castiliaria*, Guadarrama, STAUDINGER, p. 392, Deutsche ent. Zeitschr. Lep. xii, n. sp.  
*Nyssia zonaria* in the Hebrides, BARRETT, p. 9, Ent. Mag. xxxvi, GRIFFITH, t. c. p. 41.  
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*Parallage* n. g. *Nephodinae*, for *P. membranacea* n. sp., Bogotá, WARREN, p. 191, t. c.



- Paralygris* n. g., type *Eustroma delecta* Leech, WARREN, p. 110, t. c.  
*Parasyngia rufigrisea*, Old Calabar, WARREN, p. 94, t. c. n. sp.  
*Pareclipsis punctata*, Natal, WARREN, p. 97, t. c. n. sp.  
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*Perisera maculifera*, Queensland, SWINHOE, p. 310, Ann. Nat. Hist. vi, n. sp.  
*Perizoma muscosata*, Parana, WARREN, p. 180, Nov. Zool. vii, n. sp.  
*Pero muricolor*, Colombia, WARREN, p. 222, t. c. n. sp.  
*Perusia subustimaculata*, Ecuador, WARREN, p. 222, t. c. n. sp.  
*Petelia fulva*, Florida, WARREN, p. 204, t. c. n. sp.  
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*Phaulostathma* n. g. type *Eupithecia disformata* Dogn., WARREN, p. 166, t. c.  
*Phellinodes coscoja*, Ecuador, DOGNIN, p. 214, Ann. Soc. ent. Belgique xlv, n. sp.  
*Phigalia denticulata*, Texas, HULST, p. 219, J. N. York Ent. Soc. viii, n. sp.  
*Philereme nigrescens*, Oregon, HULST, p. 104, Canad. Ent. xxxii, n. sp.  
*Phorodesma smaragdaria*, variation, larval habits, BURROWS, pp. 113–115, Ent. Rec. xii.  
*P. hemistrigata*, Madagascar, MABILLE, p. 740, Ann. Soc. ent. France lxxviii, n. sp.  
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*Pisoraca thermosaria* Walk. (as *Acidalia*), pl. v, fig. 22, *scriptata* Walk. (as *Anisodes*), pl. vi, fig. 20, SWINHOE, Cat. Lep. Het. ii.  
*Plagodis kempii*, N. America, HULST, p. 220, J. N. York Ent. Soc. viii, n. sp.  
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*Polla quadrilineata*, Ecuador, WARREN, p. 222, t. c.; *P. aristarioides*, Ecuador, DOGNIN, p. 231, Ann. Soc. ent. Belgique xlv : n. spp.  
*Polygraphodes denticulata*, Parana, WARREN, p. 159, Nov. Zool. vii, n. sp.  
*Polyphasia truncata*, *rufibrunnea* subsp. n., WARREN, p. 181, t. c.  
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*Problepsis argentea*, Dammer Is., WARREN, p. 107, Nov. Zool. vii, n. sp.  
*Prochoerodes cubitata*, Brit. Guiana, WARREN, p. 223, t. c. n. sp.  
*Prospasta* n. g., near *Ptychopoda*, for *P. elata* n. sp., Ecuador, WARREN, p. 160, t. c.  
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*P. blanda*, Bismarck Arch., PAGENSTECHER, p. 151, Zoologica xxix, n. sp.

- Psilalcis breta* and *inceptaria*, distinguished, SWINHOE, p. 287, Cat. Lep. Het. ii.
- Psilosetia pura*, Venezuela, WARREN, p. 192, Nov. Zool. vii, n. sp.
- Ptychopoda basicostalis*, *squamulata*, S. Africa, WARREN, p. 93, t. c.; *P. comparanda*, Ceylon, *decidua*, N.W. India, p. 107, *robusta*, Philippines, *sextinotata*, Penang, p. 108, *squamipunctata*, Java, p. 109, WARREN, t. c.; *P. atriseriata*, Surinam, *flexicosta*, Parana, p. 161, *gibbosa*, Grenada, *indecora*, Dominica, *infantula*, Bonaire Is., p. 162, *P. ? longipedata*, Argentina, *P. ædipus*, Ecuador, *pedissequa*, Venezuela, p. 163, *substrigata*, Parana, p. 164, WARREN, t. c. : n. spp.
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- Racheocephala* n. g. for part of *Racheospila*, with *R. flavicincta*, Venezuela, *simuliplaga*, N. Friborgo, p. 137, *alboseriata*, Venezuela, *isolata*, New Grenada, *paripuncta*, Demerara, *purpureotincta*, Venezuela, p. 138, *remota*, Costa Rica, *rufiguttata*, Venezuela, p. 139, n. spp., WARREN, t. c.
- Racheospila sigillaria* var. n. *intensa*, WARREN, p. 139, t. c.; *R. saltusaria*, life-history, DYAR, p. 118, Psyche ix.
- Rheumatoptera tristata*, *sociata* varr., STICHEL, pp. 144, 145, Berlin. ent. Zeitschr. xlv.
- Rhinoprora palpata* var. n. *decolorata*, WARREN, p. 109, t. c.
- Rhodochlora roseipalpis* var. n. *basicostalis*, DOGNIN, p. 215, Ann. Soc. ent. Belgique xlv.
- R. discipuncta*, Bolivia, WARREN, p. 140, Nov. Zool. vii, n. sp.
- Rhodostrophia obscura*, Chili, WARREN, p. 164, t. c. n. sp.
- Rhomborista undiferata* Walk. (as *Comibæna*), figure, pl. vi, fig. 1, SWINHOE, Cat. Lep. Het. ii.
- Rhopalista albidivisa*, Venezuela, *requisitata*, Bolivia, p. 168, *rosenbergi*, Ecuador, *undulosa*, Parana, p. 169, WARREN, Nov. Zool. vii, n. spp.
- Rhopalodes seminivea*, Bolivia, p. 170, *variegata*, Parana, p. 171, WARREN, t. c. n. spp.
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- Scea cæsiopicta*, Bolivia, *discinota*, Merida, WARREN, p. 129, Nov. Zool. vii, n. spp.
- Scodionia leucogrammaria*, Centr. Asia, PÜNGELER, pl. iv, fig. 6, p. 121, Deutsche ent. Zeitschr. Lep. xiii, n. sp.
- Scodionyx* n. g. near *Scodionia*, for *S. mysticus* n. sp., Dead Sea, pl. v, fig. 2, STAUDINGER, p. 397, op. cit. xii.
- Scotorythra diceraunia*, Molokai, MEYRICK, p. 258, Ent. Mag. xxxvi, n. sp.
- Scotosia multivagata* Hulst, referred to *Epirrhoë*, WARREN, p. 174, Nov. Zool. vii.
- S. interrupta*, p. 217, *inepta*, p. 218, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv, n. spp.
- Selenia*, hybrids, BARTEL, pp. 342-350, Ent. Nachr. xxvi.
- Selidosema fenerata*, early stages, HUDSON, p. 11, Tr. N. Zealand Inst. xxxii.
- S. petrozona*, Victoria, p. 35, *diagramma*, N. S. Wales, p. 36, LOWER, P. Linn. Soc. N. S. Wales xxv; *S. homopteroides*, N. America, HULST, p. 219, J. N. York Ent. Soc. viii; *S. delicatum*, California, HULST, p. 106, Canad. Ent. xxxii : n. spp.
- Semiothisa combusta*, Costa Rica, p. 205, *ochrata*, *prælongata*, Dominica, p. 206, WARREN, Nov. Zool. vii; *S. regula*, p. 225, *parobditaria*, p. 226, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xlv : n. spp.
- Sewa* n. g. for *Abraxas orbiferata* Walk., SWINHOE, p. 591, Cat. Lep. Het. ii.

- Silabraxas* n. g. for *Abraxas lobata* Hamps., SWINHOE, p. 305, t. c.  
*Siona* to be used in place of *Scoria*, PROUT, p. 215, Ent. Rec. xii.  
*Skorpisthes* n. g. for *S. undascripta* n. sp., Queensland, LUCAS, p. 143, P. Soc. Queensland xv.  
*Somatina rubridisca*, Queensland, SWINHOE, p. 376, Cat. Lep. Het. ii, n. sp.  
*Spargania approbata, colorifera*, Bolivia, WARREN, p. 182, Nov. Zool. vii, n. spp.  
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*Stegania ruberata*, p. 736, *luteorubens*, p. 737, ? Madagascar, MABILLE, Ann. Soc. ent. France lxxviii, n. spp.  
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*Stenaspilates albidula*, N. America, HULST, p. 107, Canad. Ent. xxxii, n. sp.  
*Stenete ruberrima*, S. America, *tripuncta*, Amazons, WARREN, p. 193, Nov. Zool. vii, n. spp.  
*Stenopla* n. g. *Tephroclystiinae*, for *S. virescens* n. sp., Brazil, WARREN, p. 166, t. c.  
*Stenorrhoë* n. g. *Hydriomeninae*, for *S. longipennis* n. sp., Parana, WARREN, p. 183, t. c.  
*Sterrha griseolineata*, Natal, WARREN, p. 94, t. c. n. sp.  
*Synchlora glaucaria*, life-history, DYAR, p. 93, Psyche ix.  
*Synecta duplicata*, Costa Rica, WARREN, p. 199, Nov. Zool. vii, n. sp.  
*Synelys pergracilis*, Florida, HULST, p. 105, Canad. Ent. xxxii, n. sp.  
*Syngria ? cinerea*, Venezuela, WARREN, p. 124, Nov. Zool. vii, n. sp.  
*Tachyphyle undilineata*, Demerara, WARREN, p. 140, t. c. n. sp.  
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*Tephroclystis nebulosa*, larva and pupa, DYAR, p. 282, P. U. S. Mus. xxiii.  
*T. flebilis*, Alaska, HULST, p. 497, P. Washington Ac. ii; *T. insolabilis*, Arizona, *flebilis*, Alaska, HULST, p. 215, J. N. York Ent. Soc. viii; *T. plumbaria, bolterii*, p. 102, *lachrymosa, plenascripta, tenebrescens*, p. 103, N. America, HULST, Canad. Ent. xxxii : n. spp.  
*Tephronia ? oxygonaria*, Centr. Asia, PÜNGELER, pl. ix, fig. 16, p. 297, Deutsche ent. Zeitschr. Lep. xii, n. sp.  
*Tephrosia bistortata* and *crepuscularia* varr., distinctions, PROUT, pp. 9-11, Ent. Rec. xii.  
*Tetracis hyperborea*, Alaska, HULST, p. 220, J. N. York Ent. Soc. viii; *T. hyperborea*, Alaska, HULST, p. 496, P. Washington Ac. ii; *T. rufa*, Sao Paulo, WARREN, p. 224, Nov. Zool. vii : n. spp.  
*Tetragonodes rufata*, Ecuador, DOGNIN, p. 231, Ann. Soc. ent. Belgique xlv, n. sp.



- Thalassodes subreticulata*, Madagascar, MABILLE, p. 740, Ann. Soc. ent. France lxxiii, n. sp.
- T. albolineata*, Bismarek Arch., PAGENSTECHER, p. 156, Zoologica xxix ; *T. boliviensis*, Bolivia, DOGNIN, p. 215, Ann. Soc. ent. Belgique xlv : n. spp.
- Thalera ostracites*, Madagascar, KARSCH, p. 370, Ent. Nachr. xxvi ; *T. pudica*, Bismarek Arch., PAGENSTECHER, p. 157, pl. ii, fig. 7, Zoologica xxix : n. spp.
- Therina athasiaria*, life-history, DYAR, p. 10, Psyche ix ; *T. pullucidaria*, life-history, DYAR, p. 21, t. c.
- T. lugubrosa*, p. 106, *leta*, p. 107, N. America, HULST, Canad. Ent. xxxii ; *T. ? nudata*, Ecuador, DOGNIN, p. 450, Ann. Soc. ent. Belgique xlv : n. spp.
- Thysanopyga albopunctaria*, Ecuador, DOGNIN, p. 450, t. c. n. sp.
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- Tithraustes impleta*, Colombia, p. 129, *mærens*, with var. *condensata*, *picata*, with var. *intersecta*, Ecuador, p. 130, WARREN, Nov. Zool. vii, n. spp.
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- Trichogompha costimaculata*, Ecuador, WARREN, p. 186, t. c. n. sp.
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- Trichorrhages* n. g., p. 183, *Hydriomenineæ*, for *T. umbrosa* n. sp., Colombia, p. 184, WARREN, Nov. Zool. vii.
- Trochides inexpectata* var. n. *dilatata*, WARREN, p. 186, t. c.
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- Urolophia* n. g. for *Cidaria obscurata* Moore, etc., SWINHÖE, p. 337, Cat. Lep. Het. ii.
- Visiana* n. g. for *Scotosia sordidata* Moore, SWINHÖE, p. 335, t. c.
- Wauchula* n. g. near *Xystrota*, for *W. rubrotincta* n. sp., Florida, HULST, p. 216, J. N. York Ent. Soc. viii.
- Xanthorhoe lychnota*, N. S. Wales, LOWER, p. 404, P. Linn. Soc. N. S. Wales xxv ; *X. fragilis*, Colombia, WARREN, p. 184, Nov. Zool. vii : n. spp.
- Xanthoxena* n. g. *Dysphaniineæ*, p. 130, for *X. imitans*, sp. n., Ecuador, p. 131, WARREN, t. c.
- Xenocentris incolorata* var. n. *teniata*, WARREN, p. 109, t. c.
- X. mimica*, Borneo, id. l. c., n. sp.
- Xenosina* n. g., p. 114, near *Medasina*, for *X. detrita* n. sp., N. S. Wales, p. 115, WARREN, t. c.
- Xenostigma* n. g. type *Ephyra perfusaria* Walk., WARREN, p. 165, t. c.
- Zamarada crystallophana*, W. Africa, MABILLE, p. 741, Ann. Soc. ent. France lxxiii, n. sp.
- Zonosoma* ; characters of the species in conformity with ♂ genitalia, BASTELBERGER (79) ; *Z. punctaria* varr., FUCHS, p. 48, Jahrb. nassau. Ver. liii ; *Z. lenigiaria*, characters, antiquity, etc., BASTELBERGER, pp. 201-215, t. c.

## PYRALIDÆ and THYRIDIDÆ.

[Cf. BUCKLER (191), DRUCE (348), DUDGEON (352), FUCHS (474), HAMPSON (545, 546, 547), HOLLAND (595), HULST (623, 624, 626, 627), JOANNIS (662), KARSCH (676), LOWER (828, 829), LUCAS (832), MABILLE (843), MATSUMURA (867), PAGENSTECHER (975), REBEL (1073), REUTER (1104), SCHÜTZE (1168), SNELLEN (1250), STAUDINGER (1269, 1270), STITZ (1285), SWINHÖE (1298, 1299), WARREN (1374, 1375, 1376).]

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- Acentropus newæ*, note on, SCHÜTZE, p. 275, Deutsche ent. Zeitschr. Lep. xii.
- Acracona* n. g. *Galleriinae*, p. 244, for *A. remipedalis* n. sp., W. Africa, p. 245, KARSCH, Ent. Nachr. xxvi.
- Acrobasis porphyrella*, larval habits, BROWN, p. xiii, Pr.-verb. Soc. Bordeaux.
- Acrocaula* n. g. near *Acrobasis*, p. 169, for *A. comacornella* n. sp., Texas, p. 170, HULST, Canad. Ent. xxxii.
- Actenia phæalis*, Algeria, pl. iii, fig. 25, *serratalis*, Amurland, HAMPSON, p. 383, Tr. ent. Soc. London 1900, n. spp.
- Agathodes? excisalis*, Argentina, SNELLEN, p. 277, pl. xv, figg. 11, 12, Tijdschr. Ent. xliii, n. sp.
- Aglossa rubralis*, Syria, *pulverealis*, Algeria, pl. iii, fig. 2, HAMPSON, p. 378, Tr. ent. Soc. London 1900, n. spp.
- Alutefa* n. g. for *Aediodes æqualis* Walk., SWINHÖE, p. 457, pl. vii, fig. 9, Cat. Lep. Het. ii.
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- Ancylolomia westwoodi*, characters, SNELLEN, p. 305, pl. xvii, fig. 8, Tijdschr. Ent. xliii.
- Aphytoceros lucalis*, larval habits, ILLIDGE, p. 135, P. Soc. Queensland xv.
- Archernis ignealis*, fig., pl. viii, fig. 29, SWINHÖE, Cat. Lep. Het. ii.
- Aripiana idalis* Walk. (as *Zebonia*), fig., pl. vii, fig. 16, SWINHÖE, t. c.
- Arthroschista* n. g. for *Margaronia hilaralis* Walk., SWINHÖE, p. 500, t. c.
- Arxama subcervinalis*, fig., pl. vi, fig. 11, SWINHÖE, t. c.
- Aurora nigromaculella*, Arizona, HULST, p. 224, J. N. York Ent. Soc. viii; *A. nigrocinereella*, Texas, HULST, p. 176, Canad. Ent. xxxii : n. spp.
- Aziba substrigata*, Costa Rica, WARREN, p. 118, Nov. Zool. vii, n. sp.
- Banisa dohertyi* Warr. queried as *Cerataarcha*, SNELLEN, p. 276, Tijdschr. Ent. xliii.
- Benta floridella*, Florida, p. 221, *speciosella*, Arizona, p. 222, HULST, J. N. York Ent. Soc. viii, n. spp.
- Blabophanes rusticella*, arctic var., STRAND, p. 225, Ent. Nachr. xxvi.
- Blepharomastix tampiusalis* Walk. (as *Botys*), pl. viii, fig. 13, *insolitalis* Walk. (as *Astura*), fig. 31, *charesalis* Walk. (as *Botys*), fig. 19, *phaleasalis* Walk. (as *Botys*), fig. 21, figg., SWINHÖE, Cat. Lep. Het. ii.
- Bocchoris lumaralis*, Buru, HOLLAND, p. 586, Nov. Zool. vii, n. sp.
- Bostra insignis, zonalis*, Madagascar, MABILLE, p. 742, Ann. Soc. ent. France lxviii, n. spp.
- Botys calatalis* Moore=(*chalybealis* Snell.), generic position discussed, SNELLEN, p. 269, Tijdschr. Ent. xliii; *B. nubilalis* var. n. *paulalis*, FUCHS, p. 71, Jahrb. nassau. Ver. liii; *B. sordidalis* Dew. referred to *Bradina*, KARSCH, p. 374, Ent. Nachr. xxvi.
- B. chrysopygalis, elvesi*, Altai, STAUDINGER, p. 401, Deutsche ent. Zeitschr. Lep. xii; *B. triphenalis*, Chili, p. 267, pl. xv, fig. 2, *vagalis*, Java, p. 268, fig. 3, SNELLEN, Tijdschr. Ent. xliii : n. spp.
- Calamochrous pallidalis*, Centr. Asia, HAMPSON, p. 391, Tr. ent. Soc. London 1900, n. sp.
- Camptochilus sinuosus*, pl. B, fig. 24, *furcifera*, fig. 4, figg., HAMPSON, p. 229, J. Bombay Soc. xiii.
- Canarsia gracilella*, New Jersey, HULST, p. 174, Canad. Ent. xxxii, n. sp.
- Cangetta hartoghialis* Snell. (as *Paraponyx*)=(*griseolalis* Hamps.), SNELLEN, p. 291, Tijdschr. Ent. xliii.
- C. murinalis*, Java, SNELLEN, p. 292, t. c. n. sp.
- Caprinia conglobatalis*, fig., pl. vi, fig. 17, SWINHÖE, Cat. Lep. Het. ii.
- Carthade cæcalis*, pl. xv, fig. 14, SNELLEN, Tijdschr. Ent. xliii.

- Cataglyphis argyrochrysalis*, Madagascar, MABILLE, p. 743, Ann. Soc. ent. France lxviii; *C. ! phoxopteris*, Brazil, p. 295, pl. xvii, figg. 11, 12, *harpalis*, Chiriqui, p. 296, fig. 1, SNELLEN, Tijdschr. Ent. xliii : n. spp.
- Catharia pyrenæalis*, life-history, CHAPMAN, p. 75, Ent. Mag. xxxvi.
- Ceratareha umbrosa* ♂, pl. xv, figg. 9, 10, p. 276, SNELLEN, Tijdschr. Ent. xliii.
- Chalcidoptera albotessulalis*, Madagascar, MABILLE, p. 744, Ann. Soc. ent. France lxviii, n. sp.
- Chilo terrenellus*, Bismarck Arch., PAGENSTECHER, p. 160, Zoologica xxix, n. sp.
- Cirrhochrista disparalis* Walk. (as *Botys*), fig., pl. vi, fig. 13, SWINHOE, Cat. Lep. Het. ii.
- C. cacaonalis*, Queensland, pl. vi, fig. 28, p. 420, id. t. c.; *C. rauma*, Brisbane, SWINHOE, p. 313, Ann. Nat. Hist. vi; *C. trilinealis*, Bismarck Arch., PAGENSTECHER, p. 162, Zoologica xxix : n. spp.
- Cledeobia angustalis* var., FUCHS, p. 71, Jahrb. nassau. Ver. liii.
- C. chellatalis*, Algeria, p. 383, *amuralis*, pl. iii, fig. 32, p. 384, AMUR, HAMPSON, Tr. ent. Soc. London 1900; *C. hamptoni*, Transcaspiian, REBEL, p. 304, Ver. Ges. Wien 1 : n. spp.
- Clupeosoma polusalis*, fig., pl. vii, fig. 20, SWINHOE, Cat. Lep. Het. ii.
- Cænostola eromenalis* referred to *Thysanoidma*, SNELLEN, p. 297, Tijdschr. Ent. xliii.
- Conchylodes privalis*, Java, SNELLEN, p. 282, pl. xvi, fig. 1, t. c. n. sp.
- Conogethes jubata*, Queensland, LUCAS, p. 152, P. Soc. Queensland xv, n. sp.
- Constantia atrisquamalis*, pl. iii, fig. 10, p. 378, *persinualis*, *sanctalis*, fig. 15, Syria, *caidalis*, Algeria, p. 379, *fuscisectalis*, *argentalis*, p. 380, *numidalis*, *canifusalis*, pl. iii, fig. 16, p. 381, Syria, *C. (Macrotenia) leucographalis*, Spain, *oxodontalis*, Centr. Asia, p. 382, HAMPSON, Tr. Ent. Soc. London 1900, n. spp.
- Coptobasis dentalis*, Bismarck Arch., PAGENSTECHER, p. 179, Zoologica xxix, n. sp.
- Crambidion* n. g. near *Crambus*, for *C. achroellum* n. sp., Madagascar, MABILLE, p. 748, Ann. Soc. ent. France lxviii.
- Crambus hortuellus* var. n. *minimus*, p. 40, *biarmicus* var. n. *pallidus*, p. 41, STRAND, Arch. naturv. Christiania xxii, No. 5.
- C. nigroradians*, Comoro islands, MABILLE, p. 749, Ann. Soc. ent. France lxviii; *C. serraticornis*, Syria, *dalmatinellus*, Lissa, p. 369, *osseellus*, Spain, *aridalis*, Transcaucasus, p. 370, *furciferalis*, pl. iii, fig. 17, *fulvifusalis*, Amurland, *cuencalis*, Spain, fig. 9, p. 371, *atrisquamalis*, Amurland, p. 372, HAMPSON, Tr. ent. Soc. London 1900; *C. zellerellus*, altaicus, Altai, STAUDINGER, p. 402, Deutsche ent. Zeitschr. Lep. xii : n. spp.
- Crossophora microthyrallis*, pl. xv, figg. 15, 16, p. 278, SNELLEN, Tijdschr. Ent. xliii.
- Culladia*, the systematic position, SNELLEN, pp. 303-305, Tijdschr. Ent. xliii.
- Cybolomia inglorialis*, Centr. Asia, HAMPSON, p. 392, Tr. ent. Soc. London 1900, n. sp.
- Cynæda dentalis furiosa* subsp. n., HAMPSON, p. 392, t. c.
- Diasemia letalis*, Turkestan, pl. iii, fig. 27, p. 390, HAMPSON, t. c. n. sp.
- Dichocrocis chioalis*, pl. viii, fig. 27, *nigrilinealis*, fig. 9, *megillalis*, fig. 2, figg., SWINHOE, Cat. Lep. Het. ii.
- D. tigridalis*, Madagascar, MABILLE, p. 745, Ann. Soc. ent. France lxviii; *D. auritincta*, pl. ix, fig. 14, p. 74, HAMPSON, Monogr. Christmas Island : n. spp.
- Dichogama redtenbacheri*, early stages, DYAR, pp. 271, 272.

- Diplotyla javanalis*, p. 278, pl. xv, fig. 17, *quadratis*, p. 280, Java, SNELLEN, Tijdschr. Ent. xliii; *D. atrata*, Bismarck Arch., PAGENSTECHER, p. 182, pl. i, fig. 15, Zoologica xxix : n. spp.
- Diptychophora sinualis*, Armenia, p. 372, *strigatalis*, Amurland, pl. iii, fig. 23, p. 373, HAMPSON, Tr. ent. Soc. London 1900; *D. fuscobasella*, Java, SNELLEN, p. 301, pl. xvii, fig. 7, Tijdschr. Ent. xliii : n. spp.
- Dracænura versicolor*, Bismarck Arch., PAGENSTECHER, p. 177, pl. ii, fig. 36, Zoologica xxix, n. sp.
- Dyaria*; referred to *Pyralide*, nervuration, DYAR, p. 284, Canad. Ent. xxxii.
- Dysodia fenestratella*, E. Africa, WARREN, p. 90, Nov. Zool. vii; *D. bipuncta*, Perak, *lævis*, N. India, WARREN, p. 100, t. c. : n. spp.
- Edita icarusalis*, fig., pl. vi, fig. 21, SWINHOE, Cat. Lep. Het. ii.
- Endotricha drancesalis* Walk. (as *Hydrocampa*), fig., pl. vii, fig. 18, SWINHOE, t. c.
- E. jordana*, Syria, HAMPSON, p. 377, Tr. ent. Soc. London 1900; *E. erythralis*, Madagascar, MABILLE, p. 742, Ann. Soc. ent. France lxviii; *E. listeri*, pl. ix, fig. 3, p. 73, HAMPSON, Monogr. Christmas Island; *E. buralis*, Buru, HOLLAND, p. 582, Nov. Zool. vii; *E. gregalis*, Bismarck Arch., PAGENSTECHER, p. 168, Zoologica xxix : n. spp.
- Entephria tylotegalis*, Amurland, HAMPSON, pl. iii, fig. 6, p. 385, Tr. ent. Soc. London 1900; *E. 7-notata*, Madagascar, MABILLE, p. 743, Ann. Soc. ent. France lxviii; *E. sarumalis*, Buru, HOLLAND, p. 585, Nov. Zool. vii; *E. fulvomarginalis*, Bismarck Arch., PAGENSTECHER, p. 181, Zoologica xxix : n. spp.
- Eoöphyla* n. g. for *Cataclysta peribocalis* Walk. and *E. waigoalis* n. sp., Waigiu, pl. vi, fig. 29, p. 442, SWINHOE, Cat. Lep. Het. ii.
- Epæna* n. g. *Pyralidina*, p. 245, for *E. elephantinalis* n. sp., Cameroons, p. 246, KARSCH, Ent. Nachr. xxvi.
- Ephestia cautella*, natural history, ZEHNTNER, pp. 24–26, pl. i, figg. 14–16, Pflanzenluizen x.
- E. scotella*, Christmas Is., HAMPSON, p. 72, pl. ix, fig. 13, Monogr. Christmas Island, n. sp.
- Ephestiodes nigrella*, California, HULST, p. 224, J. N. York Ent. Soc. viii, n. sp.
- Erlita metaleucalis* Walk. (as *Bradina*), figure, pl. vi, fig. 27, SWINHOE, Cat. Lep. Het. ii.
- Eromene virescens*, Arizona, HULST, p. 225, J. N. York Ent. Soc. viii, n. sp.
- Erupa gigantea*, gyges, *cluaca*, *rætia*, Colombia, DRUCE, p. 526, Ann. Nat. Hist. v, n. spp.
- Ethopia roseilinea*, figure, SWINHOE, p. 416, Cat. Lep. Het. ii.
- Eufernaldia* n. g. *Crambida*, for *E. argenteonervella* n. sp., Arizona, HULST, p. 224, J. N. York Ent. Soc. viii.
- Eugauria* n. g. near *Cataclysta*, p. 290, for *E. compactalis* n. sp., Java, p. 291, pl. xvi, fig. 10, SNELLEN, Tijdschr. Ent. xliii.
- Eurycreon eversmanni* = (*Spilodes bicoloralis* Warr.), SNELLEN, p. 270, t. c.
- Eurythmia coloradella*, N. America, HULST, p. 175, Canad. Ent. xxxii, n. sp.
- Eusabena* n. g. near *Pachynoa*, p. 271, for *E. setinialis* n. sp., Borneo, p. 272, pl. xv, figg. 4, 5, SNELLEN, Tijdschr. Ent. xliii.
- Eustixia pupula*, larva, DYAR, p. 155, Canad. Ent. xxxii.
- Eutrichotis* n. g. for *Zebronia abraxalis* Walk., SWINHOE, p. 453, Cat. Lep. Het. ii.
- Euzophora inornatella*, New Jersey, HULST, p. 173, Canad. Ent. xxxii, n. sp.
- Evergestis lichenalis*, Centr. Asia, pl. iii, fig. 20, p. 387, HAMPSON, Tr. ent. Soc. London 1900, n. sp.



- Galadra rhomboidata*, figure, pl. vii, fig. 6, SWINHÖE, Cat. Lep. Het. ii.  
*Galleria mellonella*, *alvearia*, habits of larvæ, KÄEMPF (669).  
*Glaucoda* n. g. *Hydrocampinæ*, p. 247, for *G. transparentalis*, p. 248, n. sp., W. Africa, KARSCH, Ent. Nachr. xxvi.  
*Glyphandra* n. g. *Hydrocampinæ*, for *G. biincisalis* n. sp., W. Africa, KARSCH, p. 249, t. c.  
*Glyphodes* spp. larval habits in Queensland, ILLIDGE, P. Soc. Queensland xv, pp. 133, 134.  
*G. desmialis*, *malgassalis*, Madagascar, MABILLE, p. 746, Ann. Soc. ent. France lxxiii; *G. (Phacellusa) holophæalis*, Christmas Is., HAMPSON, p. 74, pl. ix, fig. 11, Monogr. Christmas Island; *G. subcrameræalis*, Bismarck Arch., PAGENSTECHER, p. 213, Zoologica xxix : n. spp.  
*Goniorynchus guliemalis*, Buru, HOLLAND, p. 587, Nov. Zool. vii, n. sp.  
*Haitufa* n. g. for *Botys fabiusalis* Walk., pl. vii, fig. 7, SWINHÖE, p. 491, Cat. Lep. Het. ii.  
*Hedylepta vildersalis*, Cherra Punji, SWINHÖE, p. 313, Ann. Nat. Hist. vi, n. sp.  
*Herculia productalis*, figure, pl. vi, fig. 24, SWINHÖE, Cat. Lep. Het. ii.  
*Heterocnephæ rotundalis*, Borneo, SNELLEN, p. 274, pl. xv, fig. 8, Tijdschr. Ent. xliii, n. sp.  
*Heterographis arizonella*, N. America, HULST, p. 222, J. N. York Ent. Soc. viii, n. sp.  
*Homura erythea*, Colombia, DRUCE, p. 527, Ann. Nat. Hist. v, n. sp.  
*Honora fumosella*, N. America, HULST, p. 175, Canad. Ent. xxxii; *H. dulcicella*, Florida, *cinereella*, *luteella*, Arizona, HULST, p. 223, J. N. York Ent. Soc. viii : n. spp.  
*Hoterodes sericealis*, Bismarck Arch., PAGENSTECHER, p. 184, Zoologica xxix, n. sp.  
*Hvidodes* n. g. for *Margarodes* Guen., SWINHÖE, p. 499, Cat. Lep. Het. ii.  
*Hydrocampa stagnalis* var., KAYE, p. xviii, P. ent. Soc. London 1900.  
*H. lipocosmalis*, Java, SNELLEN, p. 286, pl. xvi, figg. 4, 5, Tijdschr. Ent. xliii, n. sp.  
*Hypanchyla devialis* Walk. (as *Pyrælis*), figure, pl. vii, fig. 8, SWINHÖE, Cat. Lep. Het. ii.  
*Hypolamprus parisignata*, Surinam, WARREN, p. 118, Nov. Zool. vii, n. sp.  
*Hypsostrophæ costella*, Bismarck Arch., PAGENSTECHER, p. 163, Zoologica xxix, n. sp.  
*Irgilla* n. g. for *Rhodaria nypsiusalis* Walk., SWINHÖE, p. 532, Cat. Lep. Het. ii.  
*Isocentris subauroralis*, Bismarck Arch., PAGENSTECHER, p. 218, pl. ii, fig. 28, Zoologica xxix, n. sp.  
*Iza multifasciata*, p. 118, *rosenbergi*, Ecuador, *rufigrisea*, Venezuela, p. 119, WARREN, Nov. Zool. vii, n. spp.  
*Jocara (Toripalpus) dentilinella*, Arizona, HULST, p. 221, J. N. York Ent. Soc. viii, n. sp.  
*Lepidoneura grisealis*, Kuldja, pl. iii, fig. 24, p. 391, HAMPSON, Tr. ent. Soc. London 1900, n. sp.  
*Lodiana albicostalis*, Syria, HAMPSON, p. 375, t. c. n. sp.  
*Lotanga anigrusalis* Walk. (as *Botys*), pl. vi, fig. 26, *confixalis*, pl. viii, fig. 18, figures, SWINHÖE, Cat. Lep. Het. ii.  
*Lygropia sinonalis*, pl. viii, fig. 17, *propinquælis*, fig. 22, figures, SWINHÖE, t. c.  
*L. leucophanalis*, Madagascar, MABILLE, p. 746, Ann. Soc. ent. France lxxiii; *L. holoxanthalis*, Buru, HOLLAND, p. 588, Nov. Zool. vii : n. spp.  
*Macalla lophotalis*, Armenia, p. 375, *amurensis*, Ussuri, pl. iii, fig. 1, p. 376, HAMPSON, Tr. ent. Soc. London 1900, n. spp.  
*Margarodes flegia*, life-history, DYAR, p. 117, Canad. Ent. xxxii.



- Margaronia phytonalis* Walk. (as *Botys*), figure, pl. viii, fig. 10, SWINHÖE, Cat. Lep. Het. ii.
- Maricopa albocostella*, N. America, HULST, p. 176, Canad. Ent. xxxii, n. sp.
- Meca* n. g. *Pyralidinæ* near *Tegulifera*, for *M. astralis* n. sp., W. Africa, KARSCH, p. 372, Ent. Nachr. xxvi.
- Megasis cinctella*, California, HULST, p. 172, Canad. Ent. xxxii, n. sp.
- Melissoblaptēs rufoenalis*, characters, SNELLEN, p. 307, Tijdschr. Ent. xliii; *M. oblitterosa* Walk. (as *Bapara*), figure, pl. vii, fig. 2, SWINHÖE, Cat. Lep. Het. ii.
- M. eucheliellus*, Java, SNELLEN, p. 308, pl. xvii, fig. 9, Tijdschr. Ent. xliii; *M. burellus*, Buru, HOLLAND, p. 581, Nov. Zool. vii : n. spp.
- Melitara junctolineella*, N. America, HULST, p. 173, Canad. Ent. xxxii, n. sp.
- Metasia albicostalis*, p. 392, *sancta*, p. 393, Syria, HAMPSON, Tr. ent. Soc. London 1900, n. spp.
- Metæcis vorax*, Congo, in nest of *Dasychira goodi*, JOANNIS, p. 282, Bull. Mus. Paris 1900, n. sp.
- Microtenucha* n. g. *Thyrididæ*, for *Rhodoneura munda* Hamps., WARREN, p. 100, Nov. Zool. vii.
- Midila halia*, Colombia, DRUCE, p. 525, Ann. Nat. Hist. v, n. sp.
- Mineola scitulella*, *rubescens*, N. America, HULST, p. 169, Canad. Ent. xxxii, n. sp.
- Mixophila apicalis*, Bismarck Arch., PAGENSTECHER, p. 172, Zoologica xxix, n. sp.
- Monoptilota* n. g., p. 13, near *Ceara* Rag., for *M. nubilella* n. sp., N. America, p. 14, HULST, Canad. Ent. xxxii.
- Morocosma nitidaria*, Bismarck Arch., PAGENSTECHER, p. 214, pl. i, fig. 2, Zoologica xxix, n. sp.
- Mucialla?* *fuscolimbalis*, Java, SNELLEN, p. 308, pl. xvii, figg. 10, 11, Tijdschr. Ent. xliii, n. sp.
- Musotima fuscalis*, p. 298, pl. xvii, figg. 2, 3, *decoralis*, p. 299, figg. 4, 5, Java, SNELLEN, t. c. n. sp.
- Myelois dulciella*, Florida, HULST, p. 176, Canad. Ent. xxxii, n. sp.
- Nacoleia marionalis*, figure, pl. vii, fig. 11, SWINHÖE, Cat. Lep. Het. ii.
- N. dnopheralis*, Madagascar, MABILLE, p. 745, Ann. Soc. ent. France lxviii, n. sp.
- Nephopteryx pirivorella*, Japan, MATSUMURA, p. 193, Ent. Nachr. xxvi; *N. nigrostriatella*, *bistriella*, *violella*, Bismarck Arch., PAGENSTECHER, Zoologica xxix; *N. modestella*, Massachusetts, HULST, p. 170, Canad. Ent. xxxii : n. spp.
- Neoschænobia* n. g. *Schænobianæ*, for *N. testacealis* n. sp., Amurland, HAMPSON, p. 374, Tr. ent. Soc. London 1900.
- Noctuella anemicalis*, Algeria, *arcuatalis*, Samarkand, pl. iii, fig. 28, HAMPSON, p. 400, t. c.; *N. togoalis*, W. Africa, KARSCH, p. 377, Ent. Nachr. xxvi : n. spp.
- Nomophila noctuella* var., FUCHS, p. 72, Jahrb. nassau. Ver. liii.
- Nosophora chironalis*, figure, pl. viii, fig. 26, SWINHÖE, Cat. Lep. Het. ii.
- Nothosaltia* n. g. for *Salbia straminealis*, SWINHÖE, p. 471, t. c.
- Oedemataarcha* n. g. for *Botys xiphæresalis* Walk., SWINHÖE, p. 476, pl. viii, fig. 30, t. c.
- Oligostigma arcæalis*, swarming, HAMPSON, p. x, P. ent. Soc. London 1900.
- O. falcatalis*, p. 287, pl. xvi, figg. 7, 8, *excisalis*, p. 289, fig. 9, Java, SNELLEN, Tijdschr. Ent. xliii : n. spp.
- Omiodes blackburni*, larva, DYAR, p. 157, Canad. Ent. xxxii.
- Orobena extimalis* var., FUCHS, p. 73, Jahrb. nassau. Ver. liii.
- O. spiniferalis*, Centr. Asia, STAUDINGER, p. 347, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Orphnophanes strigatalis*, Bismarck Arch., PAGENSTECHER, p. 178, pl. i, fig. 16, Zoologica xxix, n. sp.

- Pachyzancla atropunctalis*, *griseolineata*, Madagascar, MABILLE, p. 747, Ann. Soc. ent. France lxxiii, n. spp.
- Pagoda poeasalis*, figure, pl. vii, fig. 24, SWINHOE, Cat. Lep. Het. ii.
- P. furcatalis*, New Guinea, pl. vii, fig. 12, *holonalis*, Borneo, fig. 22, p. 460, id. t. c.; *P. nitidalis*, Bismarck Arch., PAGENSTECHER, p. 194, Zoologica xxix : n. spp.
- Parboka* n. g. for *Phryganodes diffusimarginalis* Hamps., SWINHOE, p. 476, Cat. Lep. Het. ii.
- Paredra rigidalis*, Java, SNELLEN, p. 265, pl. xv, fig. 1, Tijdschr. Ent. xliii, n. sp.
- Parthenodes sutschana*, Amurland, HAMPSON, p. 384, Tr. ent. Soc. London 1900, n. sp.
- Parudea* n. g. *Crocidophora* group, for *P. fimbriata* n. sp., N. China, pl. viii, fig. 34, SWINHOE, p. 523, Cat. Lep. Het. ii.
- Passadena* n. g. *Phycitide*, for *P. constantella* n. sp., California, HULST, p. 171, Canad. Ent. xxxii.
- Pelina trilinealis* Walk. (as *Zebronia*), figure, pl. vii, fig. 10, SWINHOE, Cat. Lep. Het. ii.
- Peoria albidella*, California, HULST, p. 175, Canad. Ent. xxxii, n. sp.
- Perla* n. g. *Endotrichine*, p. 741, for *P. asopialis* n. sp., Madagascar?, p. 742, MABILLE, Ann. Soc. ent. France lxxiii.
- Phlyctenodes leucalis*, pl. iii, fig. 14, Caucasus, *straminealis*, Asia Minor, fig. 22, p. 388, *phæoneuralis*, Siberia, fig. 12, *rhabdalis*, fig. 4, Centr. Asia, p. 389, *subhyalinalis*, Syria, India, *foviferalis*, India, p. 390, HAMPSON, Tr. ent. Soc. London 1900, n. spp.
- Phryganodes*; characters and synonymical notes of W. African, KARSCH, pp. 375-377, Ent. Nachr. xxvi.
- P. autongilensis*, Madagascar, MABILLE, p. 744, Ann. Soc. ent. France lxxiii; *P. baratalis*, Buru, HOLLAND, p. 586, Nov. Zool. vii : n. spp.
- Pileocera illectalis*, pl. viii, fig. 21, *latalis*, pl. vii, fig. 15, *basalis*, fig. 25, *tellesalis*, pl. viii, fig. 14, *lycopusalis*, pl. vii, fig. 23, *zebrinalis*, fig. 13, figures, SWINHOE, Cat. Lep. Het. ii.
- Pilocrosis contortalis*, Amurland, pl. iii, fig. 11, p. 387, HAMPSON, Tr. ent. Soc. 1900, n. sp.
- Pionea turiusalis*, pl. viii, fig. 7, *placens*, fig. 12, figures, SWINHOE, Cat. Lep. Het. ii.
- P. ferrealis*, Amurland, pl. iii, fig. 19, p. 394, *perfervidalis*, Syria, fig. 3, *vestalis*, *albescentalis*, Armenia, *albifuscalis*, Turkestan, fig. 31, p. 395, *leucopeplalis*, Centr. Asia, fig. 7, p. 396, HAMPSON, Tr. ent. Soc. London 1900; *P. rufecolalis*, Madagascar, MABILLE, p. 747, Ann. Soc. ent. France lxxiii : n. spp.
- Pitacanda mæralis* Walk. (as *Botys*), figure, pl. vii, fig. 1, SWINHOE, Cat. Lep. Het. ii.
- Platytes leucopleuralis*, Madagascar, MABILLE, p. 748, Ann. Soc. ent. France lxxiii, n. sp.
- Plectrona orientalis*, Borneo, SNELLEN, p. 273, pl. xv, figg. 6, 7, Tijdschr. Ent. xliii, n. sp.
- Pleurotypa mysolalis* Walk. (as *Botys*), pl. viii, fig. 5, *quadriguttalis*, fig. 24, figures, SWINHOE, Cat. Lep. Het. ii.
- Polygrammodes tapsusalis*, figure, pl. viii, fig. 33, SWINHOE, t. c.
- Pramada curiusalis* Walk. (as *Botys*), figure, pl. viii, fig. 1, SWINHOE, t. c.
- Prorodes leucothyralis*, Madagascar, MABILLE, p. 746, Ann. Soc. ent. France lxxiii, n. sp.
- Psara fulgidalis*, Bismarck Arch., PAGENSTECHER, p. 217, Zoologica xxix, n. sp.
- Psorosa texanella*, N. America, HULST, p. 174, Canad. Ent. xxxii, n. sp.
- Pyralis admetalis* Walk., cf. *Noctuide*, *Tarache admetalis*.

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- P. fuvricoloralis*, Amurland, *ecteinalis*, Turkestan, p. 396, *discimaculalis*, Amurland, *griseofumalis*, Ordubad, p. 397, *cœnalis*, Amurland, *pachyceralis*, Armenia, pl. iii, fig. 26, *russulatalis*, Centr. Asia, p. 398, *catilualis*, Algeria, p. 399, HAMPSON, Tr. ent. Soc. London 1900; *P. semilimbialis*, ?Madagascar, MABILLE, p. 748, Ann. Soc. ent. France lxxviii; *P. aurifusalis*, Sula, pl. viii, fig. 25, p. 536, *kenalis*, India, fig. 28, p. 538, SWINHOE, Cat. Lep. Het. ii; *P. cajelalis*, Buru, HOLLAND, p. 590, Nov. Zool. vii : n. spp.
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- R. furcifer*, India and Australia, HAMPSON, p. 230, J. Bombay Soc. xiii; *R. phasianalis*, New Guinea, SWINHOE, p. 411, pl. vi, fig. 14, Cat. Lep. Het. ii; *R. latifasciata*, Bismarck Arch., PAGENSTECHER, p. 39, Zoologica xxix; *R. melialis*, Queensland, SWINHOE, p. 312, Ann. Nat. Hist. vi : n. spp.
- Sacada decora*, figure, pl. vi, fig. 15, SWINHOE, Cat. Lep. Het. ii.
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- Salma sagarisalis* Walk. (as *Locastra*), figure, pl. vi, fig. 23, SWINHOE, Cat. Lep. Het. ii.
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- Scoparia atomalis*, *basistrigalis*, *ulmella*, *ambigualis*, distinctions, KNAGGS, pp. 109–116, cuts, Entomologist xxxiii.
- S. susanae*, N. S. Wales, LOWER, p. 38, P. Linn. Soc. N. S. Wales xxv; *S. mesogramma*, N. S. Wales, LOWER, p. 408, t. c. : n. spp.
- Sedenia xeroscopa*, p. 37, *polydesma*, p. 38, N. S. Wales, LOWER, t. c. n. spp.
- Selagia australella*, Texas, HULST, p. 174, Canad. Ent. xxxii, n. sp.
- Sindris leucotriangula*, Madagascar?, MABILLE, p. 743, Ann. Soc. ent. France lxxviii, n. sp.
- Stemmatophora patagiialis*, W. Africa, KARSCH, p. 373, Ent. Nachr. xxvi, n. sp.
- Stenia præstichalis* Led. queried as *Cataclysta*, SNELLEN, p. 293, pl. xvii, fig. 13, Tijdschr. Ent. xliii.
- S. ferrealis*, Armenia, *flavipunctalis*, Spain, pl. iii, fig. 8, HAMPSON, p. 385, Tr. ent. Soc. London 1900, n. spp.
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- S. atribasalis*, Amurland, HAMPSON, Tr. ent. Soc. London 1900, p. 376; *S. corticalis*, Bismarck Arch., PAGENSTECHER, p. 167, pl. ii, fig. 23, Zoologica xxix : n. spp.
- Strepsinoma cresusalis* Walk. (as *Cataclysta*), figure, pl. vii, fig. 14, SWINHOE, Cat. Lep. Het. ii.
- Striglina rufitibia* redescribed, WARREN, p. 120, Nov. Zool. vii.
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- Ann. Soc. ent. France lxviii; *S. benedictalis*, Buru, HOLLAND, p. 588, Nov. Zool. vii : n. spp.
- Sylora* n. g. for *Sisyrphophora cirralis* Sw., SWINHÖE, p. 472, Cat. Lep. Het. ii.
- Symmoracma minoralis* Snell. (as *Auxomitia*) = (*Stenia profanalis* Hamps. = *spodinopa* Meyrick), SNELLEN, p. 271, Tijdschr. Ent. xliii.
- Syngamia luteofusalis, longicornalis*, Madagascar, MABILLE, p. 744, Ann. Soc. ent. France lxviii, n. spp.
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- Tangla* n. g. for *Glyphodes zangisalis* Walk., pl. viii, fig. 11, SWINHÖE, p. 501, Cat. Lep. Het. ii.
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- Tyspanodes exathesalis*, figure, pl. vi, fig. 16, SWINHÖE, Cat. Lep. Het. ii.
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- Ulopeza innotalis*, W. Africa, KARSCH, p. 374, Ent. Nachr. xxvi; *U. crocifrontalis*, Madagascar, MABILLE, p. 744, Ann. Soc. ent. France lxviii : n. spp.
- Ulotricha algerialis*, Biskra, HAMPSON, pl. iii, fig. 18, p. 377, Tr. ent. Soc. London 1900, n. sp.
- Urula* n. g. *Phycitidæ*, for *U. incongruella* n. sp., California, HULST, p. 175, Canad. Ent. xxxii.
- Vitessa hieratica*, Borneo, SWINHÖE, p. 430, pl. vi, fig. 22, Cat. Lep. Het. ii; *V. sarumensis*, Buru, HOLLAND, p. 582, Nov. Zool. vii : n. spp.
- Zeuserodes argentistriata*, Venezuela, WARREN, p. 121, t. c. n. sp.
- Zinkenien nigerrimalis*, Christmas Is., HAMPSON, p. 73, pl. ix, fig. 10, Monogr. Christmas Island, n. sp.
- Zophodia epischnioides, fuscetella*, N. America, HULST, p. 173, Canad. Ent. xxxii, n. spp.

## TORTRICIDÆ.

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- Archips luticostanus* Chr. = (*gigantana* Kennel), WALSINGHAM, p. 443, t. c.
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- Bactra roseana*, Japan, WALSINGHAM, p. 334, Ann. Nat. Hist. vi ; *B. punctistrigana*, *distinctana*, Madagascar, MABILLE, p. 751, Ann. Soc. ent. France lxviii : n. spp.
- Batodes angustiorana*, larval food, BANKES, p. 9, Ent. Mag. xxxvi.
- Brachmia medjella*, Alps, CHRÉTIEN, p. 191, Bull. Soc. ent. France 1900, n. sp.
- Brachygonia* n. g. near *Tortrix*, for *B. angulicostana*, n. sp., Japan, WALSINGHAM, p. 464, Ann. Nat. Hist. v.
- Cacoecia gigantana*, Askold, KENNEL, p. 127, pl. v, fig. 2, Deutsche ent. Zeitschr. Lep. xiii, n. sp.
- Cænognosis* n. g. near *Epulxiphora*, for *C. incisa*, n. sp., Christmas Is., WALSINGHAM, p. 79, Monogr. Christmas Island.
- Cupua* Steph. = (*Homona* Walk.), WALSINGHAM, p. 575, Swinhoe, Cat. Lep. Het. ii.
- Carposina sasakii*, Japan, MATSUMURA, p. 198, Ent. Nachr. xxvi ; *C. niponensis*, Japan, WALSINGHAM, p. 121, Ann. Nat. Hist. vi : n. spp.
- Cochylis blandana* (Ev. as *Sciaphila*) = (*punctulatana* Kenn.), KENNEL, p. 306, Deutsche ent. Zeitschr. Lep. xii.
- Conchylis helvolana* n. n. for *dilutana* K. nec Wals., KENNEL, p. 159, Deutsche ent. Zeitschr. Lep. xiii.
- C. subobscurana*, Puli Hatum, pl. v, fig. 5, p. 129, *luteopictana*, Schahkuh, fig. 6, *prangana*, Caucasus, fig. 7, p. 130, KENNEL, Deutsche ent. Zeitschr. Lep. xiii ; *C. unicolorana*, Madagascar, MABILLE, p. 750, Ann. Soc. ent. France lxviii ; *C. vanillana*, Réunion, JOANNIS, p. 263, Bull. Soc. ent. France 1900 : n. spp.
- Crocidosema demutata*, Japan, WALSINGHAM, p. 441, Ann. Nat. Hist. vi, n. sp.
- Cryptaspasma* n. g. for *Penthina lugubris* F. & R., WALSINGHAM, p. 462, Ann. Nat. Hist. v.
- Cryptophlebia ? socotrensis*, Sokotra, WALSINGHAM, p. 6, Bull. Liverp. Mus. iii, n. sp.
- Dichelia præcana*, Witim, KENNEL, p. 125, pl. v, fig. 1, Deutsche ent. Zeitschr. Lep. xiii, n. sp.
- Doloploca præviella* Ersch., characters, fig., KENNEL, p. 128, pl. v, fig. 4, t. c.
- D. lineata*, Palestine, WALSINGHAM, p. 462, Ann. Nat. Hist. v, n. sp.
- Dudua hesperialis* Walk., characters, WALSINGHAM, p. 134, op. cit. vi.
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- Epagoge halysideta*, Christmas Is., WALSINGHAM, p. 78, Monogr. Christmas Island, n. sp.
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- Exartema mori*, Japan, MATSUMURA, p. 196, Ent. Nachr. xxvi; *E. castaneanum*, p. 124, *velutinum*, p. 125, Corea, *japonicum*, *pryeranum*, p. 126, Japan, WALSINGHAM, Ann. Nat. Hist. vi : n. spp.
- Grapholitha tricuneana*, Caucasus, pl. v, fig. 30, p. 154, *recreantana*, Amur, fig. 31, p. 155, KENNEL, Deutsche ent. Zeitschr. Lep. xiii; *G. atrana*, Madagascar, MABILLE, p. 751, Ann. Soc. ent. France lxviii; *G. glycinivorella*, Japan, MATSUMURA, p. 197, Ent. Nachr. xxvi; *G. tristriatana*, *subsimplana*, p. 224, *speciosana*, p. 225, Bismarck Arch., PAGENSTECHER, Zoologica xxix : n. spp.
- Hendecaneura* n. g., p. 401, for *H. impar*, p. 402, *H.?* *cervinum*, *apicipunctum*, p. 403, n. spp., Japan, WALSINGHAM, Ann. Nat. Hist. vi.
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- Hysterosia*; synonymy and composition, WALSINGHAM, p. 445, Ann. Nat. Hist. vi.
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- Loxopera ferruginea*, Asiatic Turkey, WALSINGHAM, Ann. Nat. Hist. vi, n. sp.
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- O. notata*, Japan, WALSINGHAM, p. 129, Ann. Nat. Hist. vi, n. sp.
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- Pelatea bicolor*, Japan, WALSINGHAM, p. 335, Ann. Nat. Hist. vi, n. sp.
- Penthina caucasicana* Lischk, p. 136, pl. v, fig. 12, *hepialana*, p. 137, fig. 13, *helvinana*, fig. 14, p. 138, Mongolia, KENNEL, Deutsche ent. Zeitschr. Lep. xiii; *P. apicinudana*, Madagascar, MABILLE, p. 750, Ann. Soc. ent. France lxviii : n. spp.
- Peronea cristana*, varr., DALE, p. 179, Entomologist xxxiii.
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- Pharmacis magister*, Asiatic Turkey, WALSINGHAM, p. 443, t. c.; *P. apicana*, Japan, WALSINGHAM, p. 489, op. cit. v : n. spp.
- Phoxopteris kincaidiana*, Alaska, FERNALD, p. 500, P. Washington Ac. ii, n. sp.
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- Polychrosis (Eudemis) herculeana*, Kuldscha, p. 139, pl. v, fig. 15, *P. pullana*, Taganrog, figg. 16, 17, p. 140, KENNEL, Deutsche ent. Zeitschr. Lep. xiii, n. spp.
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- Retinia argyromixtana*, Madagascar, MABILLE, p. 751, Ann. Soc. ent. France lxviii, n. sp.
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- Sericoris morivora*, Japan, MATSUMURA, p. 195, t. c. n. sp.
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- Teras comparanum* var. n. *cinerea*, REUTER, p. 33, Acta Soc. Faun. Fenn. xv, No. 5.
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- Tortrix forsterana* var. n. *immaculatana*, STRAND, p. 43, Arch. Naturv.



- Christian. xxii, No. 5; *T. quinque maculana* Brem., characters, figure, KENNEL, p. 127, pl. v, fig. 3, Deutsche ent. Zeitschr. Lep. xiii; *T. musculinana*, note on, DURRANT, p. 60, Ent. Mag. xxxvi; *T. formosana*, larva, JOANNIS, p. 299, Bull. Soc. ent. France 1900; *T. paleana*, early stages, REUTER, pp. 35-39, Acta Soc. Faun. Fenn. xix, No. 1.
- T. saclava*, *stipulaceana*, *rubrostrigana*, p. 749, *ocellata*, p. 750, Madagascar, MABILLE, Ann. Soc. ent. France lxviii; *T. trigonana*, Japan, WALSINGHAM, p. 443, Ann. Nat. Hist. vi; *T. ditinctana*, *tigricolor*, Japan, p. 452, *conchyloides*, China, p. 453, *leechi*, p. 454, *christophana*, *joannisi*, p. 455, China, *exuberans*, Corea, *striatula*, China, etc., p. 456, *nigricaudana*, Corea, p. 459, *tristrami*, Palestine, p. 460, *barbarana*, Turkey in Asia, p. 461, WALSINGHAM, op. cit. v : n. spp.
- T. templana*, p. 225, *rufostriatana*, p. 226, Bismarck Arch., PAGENSTECHER, Zoologica xxix; *T. argyraspis*, Brisbane, LOWER, p. 410, P. Linn. Soc. N. S. Wales xxv : n. spp.

## TINEIDÆ.

- [Cf. BUCKLER (191), BUSCK (205, 206), CHRÉTIEN (250-256), DIETZ (318), DYAR (363-365), FERNALD (416), HOFMANN (597), HOLLAND (595), JOANNIS (663), LOWER (828, 829), LUCAS (832), LÜDERS (836), MURTFELDT (932), PAGENSTECHER (975), PETERSEN (993), SORHAGEN (1255), STITZ (1285), STAUDINGER (1269), TURNER (1338), WALSINGHAM (1366-1371), WALSINGHAM & DURRANT (1298), WOOD (1418), ZEHNTNER (1428).]

The male genital structures of *Tinea*, *Tineola*, *Butalis*, STITZ (1285).

*Psychides*, see *Bombyces*.

*Agriophara nodigera*, Queensland, TURNER, p. 11, Tr. R. Soc. S. Austral. xxiv; *A. curta*, Queensland, LUCAS, p. 161, P. Soc. Queensland xv : n. spp.

*Anacamptis lagunculariella*, p. 230, *argyrothamniella*, p. 231, Florida, BUSCK, P. U. S. Mus. xxiii, n. spp.

*Anaphorinæ*, revision of North American, DYAR, pp. 305-311, Canad. Ent. xxxii.

*Androgyne* n. g., p. 565, near *Nosymna*, for *A. punctata* n. sp., Sikkim, p. 566, WALSINGHAM, Swinhoe, Cat. Lep. Het. ii.

*Antispila eugeniella*, Florida, BUSCK, p. 236, P. U. S. Mus. xxiii, n. sp.

*Apatema* n. g. near *Symmoca*, p. 219, for *A. mediopallidum* n. sp., Corsica, p. 220, WALSINGHAM, Ent. Mag. xxxvi.

*Approcema crotolariella*, Florida, BUSCK, p. 226, P. U. S. Mus. xxiii, n. sp.

*Ardiosteres scoteina*, Queensland, TURNER, p. 18, Tr. R. Soc. S. Austral. xxiv, n. sp.

*Argyrotoxa 5-fasciana*, Japan, MATSUMURA, p. 195, Ent. Nachr. xxvi, n. sp.

*Aristotelia morphochroma*, Cannes and Rome, WALSINGHAM, p. 80, Ent. Mag. xxxvi; *A. ivæ*, Florida, BUSCK, p. 225, P. U. S. Mus. xxiii, n. sp.

*Atasthalistis euchroa*, Queensland, LOWER, p. 47, P. Linn. Soc. N. S. Wales xxv, n. sp.

*Atteva fabriciella* Swed. (= *niviguttella* Walk. = *fabricella*), WALSINGHAM, p. 559, Swinhoe, Cat. Lep. Het. ii.

*A. conspicua*, Buru, WALSINGHAM, p. 559, *subaurata*, Assam, DURRANT, p. 560, Swinhoe, t. c. n. spp.

*Atopocera barnesii*, Texas, DYAR, p. 326, Canad. Ent. xxxii, n. sp.

*Bedellia minor*, Florida, BUSCK, p. 243, P. U. S. Mus. xxiii, n. sp.

*Batrachedra atomosella*, Sokotra, WALSINGHAM, p. 4, Bull. Liverp. Mus. iii; *B. crypsineura*, N. S. Wales, LOWER, p. 419, P. Linn. Soc. N. S. Wales xxv : n. spp.



- Birithana* and *B. consocia* Walk., redescribed, WALSINGHAM, p. 551, Swinhoe, Cat. Lep. Het. ii.
- Blabophanes rusticella* var. n. *semispilotella*, STRAND, p. 51, Arch. naturv. Christian. xxii, No. 5.
- B. stichomela*, S. Australia, LOWER, p. 422, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Blastobasis segnella*, the habitat is Europe, not N. America, WALSINGHAM, p. 179, Ent. Mag. xxxvi.
- B. guilandinae*, Florida, BUSCK, p. 234, P. U. S. Mus. xxiii, n. sp.
- Brenthia elachista*, Christmas Is., WALSINGHAM, p. 76, Monogr. Christmas Island, n. sp.
- Bucculatrix ivella*, Florida, BUSCK, p. 243, P. U. S. Mus. xxiii, n. sp.
- Bursadella sulfurella*, Bismarck Arch., PAGENSTECHER, p. 231, Zoologica xxix, n. sp.
- Butalis basilaris*, see *Schreckensteiniella festalliella*.
- B. penicillata*, France, CHRÉTIEN, p. 163, Bull. Soc. ent. France 1900, n. sp.
- Buzeta* Walk., recharacterised, WALSINGHAM, p. 561, Swinhoe, Cat. Lep. Het. ii.
- Callitharuma* n. g. *Plutellidae* for *C. basilica* n. sp., Queensland, TURNER, p. 15, Tr. R. Soc. S. Austral. xxiv.
- Catoryctis emarginata*, Queensland, LUCAS, p. 154, P. Soc. Queensland xv, n. sp.
- Caunaca insulella*, Corsica, WALSINGHAM, p. 153, Ent. Mag. xxxvi, n. sp.
- Cebysa leucotelus* Walk. = (*Pitane dilecta* Walk. = *Sezeris conflictella* Walk. = *Ecinea scotti* Scott), WALSINGHAM, p. 583, Swinhoe, Cat. Lep. Het. ii.
- Ceratophora ochreoviridella*, Bismarck Arch., PAGENSTECHER, p. 236, Zoologica xxix, n. sp.
- Cerostoma*, cf. *Phrealcia*.
- C. kabelella*, California, DYAR, p. 40, Canad. Ent. xxxii, n. sp.
- Chilocampyla* n. g. near *Gracilaria*, p. 248, for *C. dyariella* n. sp., Florida, p. 249, BUSCK, P. U. S. Mus. xxiii.
- Choreutis*, N. American allies, synonymy, characters, FERNALD, pp. 236–245, Canad. Ent. xxxii.
- C. leucobasis*, N. America, FERNALD, p. 242, t. c.; *C. sororeculella*, *occidentella*, *extrinsicella*, p. 86, *coloradella* (Fern.), *leucobasis* (Fern.), p. 85, N. America, DYAR, t. c. : n. spp.
- Chrysoryctis ochroxantha*, Brisbane, TURNER, p. 19, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Cimitra* Walk., distinguished from *Hapsifera*, DURRANT, p. 580, Swinhoe, Cat. Lep. Het. ii.
- Coleophora spissicornis* Haw. = (*fabriciella* de Vill.), WALSINGHAM & DURRANT, p. 4, Ent. Mag. xxxvi; *C. albidella* and *anatipennella*, distinguished, SORHAGEN, p. 113, Illustr. Zeitschr. Ent. v; *C. spumosella*, *congeriella*, *acrisella*, larvæ and cases, CHRÉTIEN, p. 68, Natural. xxii; *C. stefanii*, habits, WALSINGHAM, p. 59, Ent. Mag. xxxvi.
- C. mongetella*, E. Pyrenees, CHRÉTIEN, p. 69, Naturaliste xxii, n. sp.
- Coptodisca condalæ*, Florida, BUSCK, p. 242, P. U. S. Mus. xxiii, n. sp.
- Coriscium randiella*, Florida, BUSCK, p. 247, t. c. n. sp.
- Coryptilum* Z. = (*Sippharara* Walk. = *Sagora* Walk.), *C. euchromiella* Walk. = (*repandens* Walk. M. S.), *C. rutilellum* = (*triphanoides* Snell.), WALSINGHAM, p. 580, Swinhoe, Cat. Lep. Het. ii.
- Cosmopteryx scribaiella*, distribution, ERTL, Illustr. Zeitschr. Ent. v, p. 163.
- C. pallifasciella* (Snell.), Java, ZEHNTNER (1428); *C. ipomææ*, *nigrapunctella*, Florida, BUSCK, p. 235, P. U. S. Mus. xxiii : n. spp.
- Crocathes zonodesma*, Queensland, LOWER, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Cryptophaga balteata* Walk. (as *Zitna*) = (*lurida* Meyr. = *acroleuca* Turn.), TURNER, p. 7, Tr. R. Soc. S. Austral. xxiv.

- C. opalina*, Brisbane, TURNER, l. c.; *C. eugenie*, p. 153, *molaris*, p. 154, Queensland, LUCAS, P. Soc. Queensland xv : n. spp.
- Cyptasia* Walk., cf. *Themiscyra*.
- Cyrnia* n. g. near *Apiletria*, p. 218, for *C. barbata* n. sp., Corsica, p. 219, WALSINGHAM, Ent. Mag. xxxvi.
- Davendra* Moore, cf. *Tortricomorpha*.
- Dendroneura punctata*, Christmas Is., WALSINGHAM, p. 80, Monogr. Christmas Island, n. sp.
- Depressaria persicæella*, N. America [Murtfeldt, 1899] referred to *Gelechia* and redescribed, with larva, MURTFELDT, Canad. Ent. xxxii, pp. 164, 165; *D. amyrisella*, Florida, BUSCK, p. 233, P. U. S. Mus. xxiii : n. spp.
- Enemia rutillella*, Bismarek Arch., PAGENSTECHER, p. 233, Zoologica xxix ; *E. micoleuca*, Queensland, TURNER, p. 14, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Eomystis asteropa*, Queensland, LOWER, p. 410, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Epermenia pimpinella*, N. America, with egg and larva, MURTFELDT, p. 162, Canad. Ent. xxxii, n. sp.
- Eretmocera aurovittata*, Bismarek Arch., PAGENSTECHER, p. 23, Zoologica xxix, n. sp.
- Eriocephalidæ* and *Micropterygidæ*, relations etc., HOFMANN (597).
- Eriocrania fimbriata*, England, WALSINGHAM, p. 106, Ent. Mag. xxxvi, n. sp.
- Eschatura lemurias* Meyr. = (*Phlæophora codonoptera* Turn.), TURNER, p. 11, Tr. R. Soc. S. Austral. xxiv.
- Eucatagma* n. g. *Tineidæ*, for *E. amyrisella* n. sp., Florida, BUSCK, p. 247, J. N. York Ent. Soc. viii.
- Eucatoptus striatella*, N. America, p. 163, with larva, p. 164, MURTFELDT, Canad. Ent. xxxii, n. sp.
- Euclemensia schwarziella*, N. America, BUSCK, p. 239, J. N. York Ent. Soc. viii, n. sp.
- Eucordylea* n. g. *Gelechiidæ*, p. 349, for *E. atrupictella* n. sp., N. America, DIETZ, Ent. News Philad. xi.
- Eucosmophora sideroxyllonella*, Florida, BUSCK, P. U. S. Mus. xxiii, n. sp.
- Eulechria autophylla* n. n. for *autophylla* Low., LOWER, p. 412, P. Linn. Soc. N. S. Wales xxv.
- E. photinopsis*, p. 40, *eriopa*, *pentaspila*, p. 41, N. S. Wales, LOWER, t. c.; *E. leptomera*, Victoria, LOWER, p. 412, t. c. : n. spp.
- Eulepiste cockerelli*, New Mexico, DYAR, p. 307, Canad. Ent. xxxii, n. sp.
- Exapate duratella*, natural history, CHRÉTIEN, pp. 118-120, Naturaliste xxii.
- Felderia dorsimacula*, Arizona, DYAR, p. 328, Canad. Ent. xxxii, n. sp.
- Gelechia apolectella*, Corsica, p. 216, *lyciella*, *micradelpha*, Perpignan, p. 217, *G. ? ocymoidella*, Vernet, p. 218, WALSINGHAM, Ent. Mag. xxxvi; *G. fusculella*, Bismarek Arch., PAGENSTECHER, p. 235, Zoologica xxix; *G. sarcocochroma*, Sokotra, WALSINGHAM, p. 3, Bull. Liverp. Mus. iii; *G. ? mesoleuca*, *G. tridecta*, p. 48, *dictyomorpha*, p. 49, *orthanotos*, p. 50, Australia, LOWER, P. Linn. Soc. N. S. Wales xxv; *G. melanartha*, p. 416, *heliochares*, *heliopa*, p. 417, N. S. Wales, LOWER, t. c. : n. spp.
- Genostele* n. g. *Hyponomeutidæ*, p. 5, for *G. reniger* n. sp., Sokotra, p. 6, WALSINGHAM, Bull. Liverp. Mus. iii.
- Glyphipteryx fuscoviridella*, larva and habits, SICH, p. 192, Ent. Rec. xii; *G. equitella*, larva, SICH, p. 298, t. c.
- G. quadragintapunctata*, Kansas, DYAR, p. 84, Canad. Ent. xxxii, n. sp.
- Gnorimoschema* n. g. type *Gelechia gallæsolidaginis* Riley, *G. terracottella* n. sp., Florida, BUSCK, p. 227, P. U. S. Mus. xxiii.

- Gonæpa* and *G. josianella* Walk., characters of, WALSINGHAM, p. 543, Swinhoe, Cat. Lep. Het. ii.
- Goniodoma*, larval habits, WALSINGHAM, p. 158, Ent. Mag. xxxvi.
- Gourbia* n. g., *staphylinella* n. sp., Tunis, CHRÉTIEN, p. 119, Naturaliste xxii.
- Gracilaria polyplaca*, sexes, TURNER, p. 20, Tr. R. Soc. S. Austral. xxiv.
- G. coccinea*, India, WALSINGHAM, p. 576, Swinhoe, Cat. Lep. Het. ii; *G. albicincta*, p. 20, *leptalea*, p. 21, Brisbane, TURNER, Tr. R. Soc. S. Austral. xxiv : n. spp.
- G. burserella*, *sebastianella*, Florida, BUSCK, p. 251, P. U. S. Mus. xxiii, n. spp.
- Guenea* Bruand, 1847, omitted from Scudder's Nomenclator, WALSINGHAM, p. 152, Ent. Mag. xxxvi.
- Hemerophila dyari*, with larva, Florida, BUSCK, p. 242, nervuration, pl. ix, fig. 9, BUSCK, J. N. York Ent. Soc. viii, n. sp.
- Hieropola* Meyr., cf. *Tisobarica*.
- Homadula coscinopa*, N. S. Wales, LOWER, p. 51, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Homaledra* n. g. *Elachistidæ*, p. 236, for *H. heptathalama* n. sp., Florida, p. 237, BUSCK, P. U. S. Mus. xxiii.
- Hoplitica* Meyr., cf. *Tisobarica*.
- H. habroptera*, Queensland, LOWER, p. 411, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Hyperperissa* n. g. *Gelechiidæ*, for *Sidyma aurantiaca* Semper, WALSINGHAM, p. 546, Swinhoe, Cat. Lep. Het. ii.
- Hypsolophus granti*, p. 2, *thoracella*, p. 3, Sokotra, WALSINGHAM, Bull. Liverp. Mus. iii, n. spp.
- Ischnoscia* Meyr. = (*Guenea* Mill. nec Bruand), WALSINGHAM, p. 152, Ent. Mag. xxxvi.
- I. carbonifera*, Corsica, id. l. c. n. sp.
- Jobula* Walk., cf. *Tortricomorpha*.
- Lamprolophus* n. g. *Elachistidæ*, for *L. lithella* n. sp., Florida, with larva, p. 241, nervuration, pl. ix, fig. 5, BUSCK, J. N. York Ent. Soc. viii.
- Laverna argentimaculella*, N. America, with larva, MURTFELDT, Canad. Ent. xxxii, n. sp.
- Leioprora* n. g. near *Lyonetia*, for *L. ascepta* n. sp., Brisbane, TURNER, p. 22, Tr. R. Soc. S. Austral. xxiv.
- Leucoptera smilaciella*, with larva, N. America, BUSCK, p. 244, nervuration, pl. ix, fig. 6, J. N. York Ent. Soc. viii; *L. erythrinella*, *guettardella*, Florida, BUSCK, p. 239, P. U. S. Mus. xxiii : n. spp.
- Lichenaula inscripta*, male, TURNER, p. 9, Tr. R. Soc. S. Austral. xxiv.
- L. velitata*, *circumsignata*, p. 155, *dirigens*, *provisa*, p. 156, *petulans*, *umbrosa*, p. 157, *tortriciformis*, p. 158, Queensland, LUCAS, P. Soc. Queensland xv; *L. amblygona*, p. 9, *tholodes*, p. 10, Brisbane, TURNER, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Linosticha pudica*, N. S. Wales, LOWER, p. 41, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Lita mucronatella*, Alps, CHRÉTIEN, p. 138, Bull. Soc. ent. France 1900; *L. capsophilella*, Alps, CHRÉTIEN, p. 223, t. c. : n. spp.
- Lithocolletis*; structure, larvæ and habits of species allied to *L. concomitella*, WOOD (1418); *L. mahalebella*, distinguished from *cerasicotella*, and *betulæ* from *corylifoliella*, SORHAGEN, pp. 114, 115, Illustr. Zeitschr. Ent. v; *L. schreberella*, var. n. *obumbrata*, p. 212, pl. fig. 4, *quinqueguttella* Staint. and others, pp. 232, 233, *cerisotella* etc., pp. 248–251, characters and habits, SORHAGEN, t. c.; *L. pyrivorella*, habits, BANKES, p. 125, Ent. Mag. xxxvi.
- Lithocolletis lativittella*, p. 211, pl. fig. 1, *crocinea*, fig. 2, *græseriella*, fig. 5, p. 212, *domesticella*, fig. 14, p. 213, *repentella*, p. 232, fig. 7, *dahmiella*,



- p. 250, fig. 18, Germany, SORHAGEN, Illustr. Zeitschr. Ent. v ; *L. verbesinella*, Florida, BUSCK, p. 246, P. U. S. Mus. xxiii : n. spp.
- Lozostoma asema*, Queensland, TURNER, p. 23, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Metriochroa* n. g. near *Ornix*, p. 244, for *M. psychotriella*, n. sp., Florida, p. 245, BUSCK, P. U. S. Mus. xxiii.
- Metzneria lappella*, early stages, FYLES, p. 15, Canad. Ent. xxxii ; *M. littorella*, larva, WALSINGHAM, p. 127, Ent. Mag. xxxvi.
- Micropteryx* ; larval habits, pupa, fig., HOFMANN, pp. 84-86, and 99, Illustr. Zeitschr. Ent. v ; *Micropteryx* and *Eriocrania*, synonymy, TUTT, pp. 314, 315, Ent. Rec. xii.
- Mieza* ? *inornata*, Sokotra, WALSINGHAM, p. 6, Bull. Liverp. Mus. iii ; *M. ? sanguinicornis*, Ceylon, WALSINGHAM, p. 562, Swinhoe, Cat. Lep. Het. ii, n. sp.
- Monopis meliorella* Walk. = (*nivibractella* Walk. = *nivileractella* Walk.), WALSINGHAM, p. 577, Swinhoe, t. c.
- Machæritis xerodes*, N. S. Wales, LOWER, p. 414, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Macrobathra philopsamma*, S. Australia, LOWER, p. 47, t. c. n. sp.
- M. zonodesma*, p. 414, *eudesma*, *microspora*, p. 415, Australia, LOWER, t. c. n. spp.
- Marmara guilandinella*, Florida, BUSCK, p. 245, P. U. S. Mus. xxiii, n. sp.
- Maroga mythica* Meyr. = (*undosa* Luc.), TURNER, p. 10, Tr. R. Soc. S. Austral. xxiv.
- Nealyda* n. g. *Elachistidæ*, p. 350, for *N. bifidella*, n. sp., Colorado, pl. i, fig. 2, p. 351, DIETZ, Ent. News Philad. xi.
- Nealyda* referred to *Gelechiidæ*, p. 228, *N. pisoniæ*, p. 229, *kinzella*, p. 230, Florida, BUSCK, P. U. S. Mus. xxiii, n. spp.
- Nematois solstitiella*, India, WALSINGHAM, p. 584, Swinhoe, Cat. Lep. Het. ii, n. sp.
- Nemophora leptosticta*, p. 16, *iolampra*, p. 17, Australia, TURNER, Tr. R. Soc. S. Austral. xxiv, n. spp.
- Neolophus persimplex*, Arizona, DYAR, p. 327, Canad. Ent. xxxii, n. sp.
- Nephogenes basatra*, p. 43, *crassinervis*, *susanae*, p. 44, *atrisignis*, p. 45, *erebomorpha*, p. 46, N. S. Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Nepticula condaliafoliella*, *myricafoeliella*, Florida, BUSCK, p. 238, P. U. S. Mus. xxiii, n. sp.
- Œcophora megaloplaca*, N. S. Wales, LOWER, p. 46, P. Linn. Soc. N. S. Wales xxv ; *Œ. eusema*, N. S. Wales, LOWER, p. 413, t. c. : n. spp.
- Onebala simplex*, Sokotra, WALSINGHAM, p. 2, Bull. Liverp. Mus. iii, n. sp.
- Opogona dimidiatella*, the habitat is Java, not Europe, WALSINGHAM, p. 180, Ent. Mag. xxxvi.
- Opostega nubifera*, Queensland, TURNER, p. 23, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Ornix trigonophora*, p. 21, *acrobaphes*, p. 22, Queensland, TURNER, t. c. n. spp.
- Ortholophus piger*, Texas, DYAR, p. 328, Canad. Ent. xxxii, n. sp.
- Otites bambusæ*, *hederae*, India, WALSINGHAM, p. 544, Swinhoe, Cat. Lep. Het. ii, n. spp.
- Palparia*, cf. *Wingia*.
- Paltodora sagittifera*, N. S. Wales, LOWER, p. 416, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Paramorpha aprilina*, habits, early stages, pp. 645, 646, imago, pl., fig. 1, FROGGATT, Agric. Gaz. N. S. W. xi.
- Pedois* n. g. (Meyr.) *Œcophoridæ*, with *P. cosmopoda*, p. 12, *rhodomita*, p. 13, n. spp., Queensland, and including *humerana*, *tripunctella* Walk., *neurosticha* Low., TURNER, Tr. R. Soc. S. Austral. xxiv.



- Peritornenta* n. g. (Meyr.) *Æcophoridae*, p. 13, for *P. stigmatias* n. sp., Brisbane, p. 14, and *circulatella* Walk., TURNER, t. c.
- Philobota micrastis*, *paragypsa*, p. 412, *P.?* *tetraspota*, p. 413, Australia, LOWER, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Phrealcia* n. subg. of *Cerostoma*, for *P.* (sic) *brevipalpella*, n. sp., Alps of France, CHÉRIEN, p. 90, Bull. Soc. ent. France 1900; *P. brevipalpella*, habits, VIARD, p. 270, t. c.
- Phyllocnistis*; LÜDERS (836); *P. insignis* Frey = (*erechthisella* Chamb.), BUSCK, p. 252, P. U. S. Mus. xxiii.
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- Phylomictis arctans*, p. 159, *decretoria*, *obliquata*, p. 160, Queensland, LUCAS, P. Soc. Queensland xv, n. spp.
- Pilostibes trachyptera*, Queensland, TURNER, p. 6, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Podiasa* n. g. *Tineidae* for *P. chiococcella*, n. sp., Florida, BUSCK, p. 240, P. U. S. Mus. xxiii.
- Polyhymno acaciella*, with larva, N. America, nervuration, pl. ix, fig. 1, BUSCK, p. 235, J. N. York Ent. Soc. viii, n. sp.
- Procometis kylonoma* Meyr. = (*acompta* Turn. = *heterogama* Low.), TURNER, p. 11, Tr. R. Soc. S. Austral. xxiv.
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- Pyroderces thermophila*, New South Wales, LOWER, p. 419, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Sagora* Walk. cf. *Coryptilum*.
- Saphtha elegans*, India, WALSINGHAM, p. 567, Swinhoe, Cat. Lep. Het. ii, n. sp.
- Scardia clathrella* F. & R. = (*dicyotis* Meyr.), WALSINGHAM, p. 579, t. c.
- Scelorthus* n. g. *Elachistidae*, p. 239, for *S. pisoniella*, n. sp., Florida, p. 240, nervuration, pl. ix, fig. 4, larva, p. 240, BUSCK, J. N. York Ent. Soc. viii.
- Schreckensteiniella festaliella*, nec *Butalis basilaris*, was the species habits of which were recorded in Psyche vii, 1895; DYAR, p. 11, Psyche ix.
- Scythris denticolor*, *neurogramma*, p. 4, *S.?* *pectinicornis*, p. 5, Sokotra, WALSINGHAM, Bull. Liverp. Mus. iii, n. spp.
- Simaethis ornaticornis*, Christmas Is., WALSINGHAM, p. 77, Monogr. Christmas Island, n. sp.
- Sippharara* Walk. cf. *Coryptilum*.
- Stathmopoda mannophora*, Queensland, TURNER, p. 23, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Syntomactis oxyptera*, *xenonympha*, p. 420, *chionomera*, p. 421, N. S. Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Telecrates tessellata*, Queensland, LUCAS, p. 159, P. Soc. Queensland xv, n. sp.
- Thaumatographa excellens*, Bismarck Arch., PAGENSTECHE, p. 230, Zoologica xxix, n. sp.
- Thenuscyra* Walk. = (*Cyrtasia* Walk.), WALSINGHAM, p. 560, Swinhoe, Cat. Lep. Het. ii.
- Tinea vinculella* and allies, synonymy, WALSINGHAM, p. 177, Ent. Mag. xxxvi; *T. fuscipunctella*, destroying pupæ, SKINNER & SATTERTHWAIT, p. 502, Ent. News Philad. xi.
- T. richardsoni*, England, p. 176, *mensella*, Corsica, p. 177, *pachyceras*,

- Switzerland, p. 178, WALSINGHAM, Ent. Mag. xxxvi; *T. oregonella*, N. America, BUSCK, p. 246, J. N. York Ent. Soc. viii : n. spp.
- Tisobarica* Walk. = (*Hieropola* Meyr. = *Hoplitica* Meyr.), WALSINGHAM, p. 553, Swinhoe, Cat. Lep. Het. ii.
- Tortricomorpha* Feld. = (*Vinzela* Walk. = *Jobula* Walk. = *Davendra* Moore), WALSINGHAM, p. 546, Swinhoe, Cat. Lep. Het. ii.
- T. chlorolepis*, Christmas Is., WALSINGHAM, p. 78, Monogr. Christmas Island; *T. albifasciella*, Bismarck Arch., PAGENSTECHER, p. 234, Zoologica xxix; *T. hemixanthella*, Buru, HOLLAND, p. 590, Nov. Zool. vii; *T. congrualis*, New Guinea, p. 546, *diluticiliata*, Assam, *obliquefasciata*, Singapore, p. 547, WALSINGHAM, Swinhoe, Cat. Lep. Het. ii : n. spp.
- Trachyntis erebocosma*, p. 42, *peloma*, p. 43, N. S. Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Trichotaphe melantherella*, *condaliavorella*, Florida, BUSCK, p. 232, P. U. S. Mus. xxiii, n. spp.
- Triclonella* n. g. *Ecophoridae*, p. 236, pl. ix, fig. 2, for *T. pergandeella*, with larva, p. 237, *vilella*, p. 238, n. spp., N. America, BUSCK, J. N. York Ent. Soc. viii.
- Vinzela* Walk., cf. *Tortricomorpha*.
- Walsinghamia slossonia*, Florida, FERNALD, p. 244, Canad. Ent. xxxii, n. sp.
- Wingia* n. n. for *Palparia* Wing, WALSINGHAM, p. 552, Swinhoe, Cat. Lep. Het. ii.
- Xenolechia peltosema*, N. S. Wales, LOWER, p. 50, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Xylorieta lychnobii*, Queensland, LUCAS, p. 158, P. Soc. Queensland xv; *X. assimilis*, p. 7, *acrochroa*, p. 8, Australia, TURNER, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Xysmatodona polymeres*, *lenceres*, Brisbane, TURNER, p. 18, Tr. R. Soc. S. Austral. xxiv, n. spp.
- Yponomeutidæ*; table of N. American genera, and synonymy of species, DYAR, pp. 37 etc. Canad. Ent. xxxii.
- Ypsolophus chloranthes*, *macrosemus*, N. S. Wales, LOWER, p. 418, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Zauclophora* n. g. near *Lichenaula*, p. 8, for *Z. pelodes*, n. sp., Brisbane, p. 9, TURNER, Tr. R. Soc. S. Austral. xxiv.
- Zelleria phillyrella*, in Ireland, BARRETT, p. 4, Ent. Mag. xxxvi.
- Z. ribesiella*, Ardèche, JOANNIS, p. 391 (larva, CHRÉTIEN, p. 393), Bull. Soc. ent. France 1900; *Z. cremnospila*, *hemixipha*, p. 421, *leucomorpha*, p. 422, Australia, LOWER, P. Linn. Soc. N. S. Wales xxv : n. spp.
- Zonops* n. g. *Tineidæ*, for *Z. heteroleuca*, n. sp., Brisbane, TURNER, p. 17, Tr. R. Soc. S. Austral. xxiv.

## PTEROPHORIDÆ and ORNEODIDÆ.

[Cf. BUCKLER (191), CHAPMAN (240), PAGENSTECHER (975), PETERSEN (993), SCHÜTZE (1168), WALSINGHAM (1366, 1367), WALSINGHAM & DURRANT (1298).]

- Aciptilia niveodactyla*, Bismarck Arch., PAGENSTECHER, p. 240, Zoologica xxix, n. sp.
- Agdistis minima*, Sokotra, WALSINGHAM, p. 1, Bull. Liverp. Mus. iii, n. sp.
- Alucita albitarsella*, India, WALSINGHAM, p. 542, Swinhoe, Cat. Lep. Het. ii, n. sp.
- Amblyptilia* ? *atrodactyla*, Bismarck Arch., PAGENSTECHER, p. 239, Zoologica xxix, n. sp.

- Cosmoclostis quadriquadra*, Christmas Is., WALSINGHAM, p. 75, Monogr. Christmas Island, n. sp.
- Deuteroscopus rubrodactylus*, Bismarck Arch., PAGENSTECHER, p. 241, Zoologica xxix, n. sp.
- Hofmannia* n. g. *Orneodidae*, for *H. septemdactyla* n. sp., Bismarck Arch., PAGENSTECHER, p. 241, t. c.
- Orneodes hofmanni*, Bismarck Arch., PAGENSTECHER, p. 242, t. c.
- Leioptilus*? *griseodactylus*, *L. sericeodactylus*, Bismarck Arch., PAGENSTECHER, p. 240, t. c. n. spp.
- Pterophorus galactodactylus*, last larval moult, CHAPMAN (240).
- Synaphia* n. g. *Pterophoridae*, for *S. pyrrha* n. sp., Bismarck Arch., PAGENSTECHER, p. 238, Zoologica xxix.
- Trichoptilus ralumensis*, Bismarck Arch., PAGENSTECHER, p. 239, t. c. n. sp.

# (D.) DIPTERA.

[Cf. AUSTEN (48, 983), BECKER (82, 83), BENGTTSSON (94), BERLESE (103-105), BEZZI (118, 119), BOLLE (135), BRUES (185), CANNON (226), CHRISTOPHERS & STEPHENS (257), COCKERELL (268-270), COLLEDGE (287), COQUILLET (288-294, 616), CZERNY (306-308), DANIELS (309), DANIELS, STEPHENS & CHRISTOPHERS (310), DOANE (333), ESCHERICH (382), FRENCH (447), FROGGATT (464, 468), GILES (508), GRASSI (516-519), HENDEL (580, 581), HENNEGUY (582), HINE (594), HOUGH (609), HOWARD (611, 612, 613, 615), HUBER (618), HUNTER (630), HUTTON (631), IMHOF (637), JACOBS (638, 639), JOHNSON (665, 666), KELLOGG (683-685), KERTÉSZ (695-699), KIEFFER (477, 704-708), KIEFFER & TROTTER (709), LAVERAN (799-801), LÉCAILLON (806), LUNDBECK (838), LÜSTNER (839), DE MEIJERE (886-888), MELANDER (889), MELANDER & BRUES (890), MÉNÉGAUX (894, 895), MIALl & HAMMOND (907), MIK (909-911), MEUNIER (900, 905), NOÉ (946), ORMEROD (965), OSTEN SACKEN (972), PANDELLÉ (977), PANTEL (978), PIEPER (984), PERRONCITO (992), PORTSCHINSKY (1048, 1049), PRATT (1054), RICARDO (1115-1117), RÖDER (1124), SAUNDERS (1148), SHARP (1208), SNOW & MILLS (1252), SPEISER (1260-1264), STEFANI (1274), STEIN (1276-1280), STEPHENS & CHRISTOPHERS (1281), STROBL (1290-1292), SUPINO (1293-1295), THEOBALD (1314, 1316), TRUCHOT (1329), VANÉY (1348-1350), VILLENEUVE (1358), VOGLER (1359, 1360), WASMANN (1378), WEBSTER (1388), WESCHÉ (1406), WHEELER (1410, 1411), WILLISTON (511), WRIGHT (1419), WULF (511).]

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The forms in which halteres are absent, SPEISER, Arch. Naturg. lxi, p. 41.

Physiology of metamorphosis, see Physiology, p 84, and Development, p. 88.

The heart-cords of *Phalacrocer* larva, BENGTTSSON (94).

Structure and life history of *Chironomus*, MIALl & HAMMOND (907).

Catalogue of S. American *Diptera*, pt. i, Bibliography and *Nemocera*, HUNTER (630).

Claws, empodium and pulvilli, KIEFFER (708).

Oxen-born Bees, WRIGHT (1419).

*Diptera* and human excrement, conveyance of typhoid, HOWARD (611).

*Diptera* of Alaska, COQUILLET (290).

*Diptera* of Greenland, LUNDBECK (838).

Embryology of *Melophagus*, origin of imaginal discs, PRATT (1054).

The splitting of the puparium in various *Diptera*, relations of *Orthorrhapha* and *Cyclorrhapha*, *Cyclorrhapha anatria*, and *C. atria*, DE MEIJERE (886).

*Eretmoptera* n. g. of doubtful family? near *Chironomidae*, for *E. browni* n. sp., California, KELLOGG, p. 82, Biol. Bull. i.



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- Hessian-fly, FROGGATT (464).
- Physiology of metamorphosis, larval anatomy, *Diplosis*, BERLESE, pp. 100-118, Riv. Patol. Veg. viii.
- Cecidomyiid gall on the Monterey pine, CANNON (226).
- Asphondylia sarothamni*, synonymical note, KIEFFER, p. 383, Bull. Soc. ent. France 1900.
- A. conglomerata*, Sicily, STEFANI, p. 16, Atti Acc. Gioen. lxxvii; *A. pilosa*, *stefanii*, *thymi*, Europe and Algeria, KIEFFER, p. 59, Bull. Soc. Metz, Cah. 20; *A. mentzeliae*, New Mexico, COCKERELL, p. 302, Entomologist xxxiii: n. spp.
- Cecidomyia fagi*, synonymical note, KIEFFER, p. 383, Bull. Soc. ent. France 1900; *C. oenophila*, habits, larva, galls, TRUCHOT (1329).
- D. pini-radiata*, California, SNOW & MILLS, p. 491, pl. xii, Ent. News Philad. xi, n. sp.
- Clinodiplosis caricis*, Europe, KIEFFER, p. 61, Bull. Soc. Metz, Cah. xx; *C. vitis*, Germany, LÜSTNER, p. 81, pl., Ent. Nachr. xxvi: n. spp.
- Contarinia ballota*, *scabiosa*, p. 60, *ilicis*, *equalis*, p. 61, Europe, Algeria, KIEFFER, Bull. Soc. Metz, Cah. 20, n. spp.
- Dasyneura scirpi*, Europe, KIEFFER, p. 58, t. c. n. sp.
- Dicerura* n. g. near *Holoneurus*, for *D. scirpicola* n. sp., Europe, KIEFFER, t. c. p. 57.
- Diplosis rosivora*, N. America, COQUILLETT, p. 46, Bull. U. S. Dep. Agric. Ent. xxii; *D. violicola*, N. America, COQUILLETT, p. 48, t. c.: n. spp.
- Dryomia* n. g. for *Cecidomyia circinnans*, etc., KIEFFER, p. 17, Bull. Soc. Metz, Cah. 20.
- Harmandia petioli*, Europe, KIEFFER, p. 61, t. c. n. sp.
- Hormomyia cornifex*, Europe, KIEFFER, p. 60, t. c. n. sp.
- Janetiella* n. g. for *Cecidomyia thymi*, etc., KIEFFER, t. c., p. 23.
- Lasioptera thapsiae*, Algeria, *graminicola*, Europe, KIEFFER, p. 58, t. c. n. spp.
- Lestodiplosis lineata*, *alternans*, *septemguttata*, *cruenta*, p. 62, *pallidicornis*, *fratricida*, *rosea*, *corticalis*, p. 63, Europe and Algeria, KIEFFER, t. c. n. spp.
- Macrolabis hippocrepidis*, Europe, KIEFFER, p. 59, t. c. n. sp.
- Mikiola cristata*, Europe, KIEFFER, p. 60, t. c. n. sp.
- Neocerata* n. g. for *N. rhodophaga* n. sp., N. America, COQUILLETT, p. 47, Bull. U. S. Dep. Agric. Ent. xx.
- Oligotrophus pantelii* or *juniperinus*, gall, MIK, p. 147, Wien. ent. Zeit. xix.
- Pseudohormomyia* n. g., p. 57, for *P. granifex* n. sp., Europe, p. 58, KIEFFER, Bull. Soc. Metz, Cah. 20.
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- Rhizomyia* n. g. near *Contarinia*, p. 56, for *R. perplexa* n. sp., Europe, p. 57, KIEFFER, Bull. Soc. Metz, Cah. xx.
- Stefaniella* near *Lasioptera*, p. 55, for *S. atriplicis*, *brevipalpis* n. spp., Sicily, p. 56, KIEFFER, t. c.
- Stefaniella trinacriae*, Sicily, STEFANI, p. 9, Atti Acc. Gioen. lxxvii, n. sp.
- Strobliella* n. g. *Campylomyzides*, for *S. intermedia* n. sp., Styria, KIEFFER, p. 51, Bull. Soc. Metz, Cah. 20.

*Wasmanniella* n. g. *Campylomyzides*, for *W. aptera* n. sp., Europe, KIEFFER, p. 49, t. c.

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Relations of existing genera, and those found in amber, MEUNIER (905).

*Boletina analis* var. *postposita*, STROBL, p. 98, Wien. ent. Zeit. xix.

*B. inops*, Alaska, COQUILLET, p. 391, P. Washington Ac. ii, n. sp.

*Ceroplastus bellulus*, Mexico, p. 219, pl. iv, fig. 3, WILLISTON, Biol. Centr.-Amer. Dipt. i, n. sp.

*Diadocidia borealis*, Brit. Colombia, COQUILLET, p. 390, P. Washington Ac. ii, n. sp.

*Glaphyroptera maculosa*, Travnik, STROBL, p. 653, Wiss. Mitt.-Bosnien vii, n. sp.

*Hesperodes* n. g. near *Hesperinus*, for *H. johnsoni* n. sp., N. America, COQUILLET, p. 429, Ent. News Philad. xi.

*Platyura elegantula*, Mexico, p. 218, pl. iv, fig. 2, WILLISTON, Biol. Centr.-Amer. Dipt. ii, n. sp.

*Plesiastina bifasciata*, Mexico, WILLISTON, p. 217, pl. iv, fig. 1, t. c. n. sp.

*Monoclona atrata*, Jablanica, STROBL, p. 651, Wiss. Mitt. Bosnien vii, n. sp.

*Mycetophila signata*, physiology of metamorphosis, larval anatomy, BERLESE, Riv. Patol. Veg. viii, pp. 86-97.

*Neoempheria kincaidi*, Alaska, COQUILLET, p. 391, P. Washington Ac. ii, n. sp.

*Neoglaphyroptera amabilis*, Mexico, WILLISTON, p. 219, Biol. Centr.-Amer. Dipt. i, n. sp.

*Palæosynapha* n. g. near *Synapha*, see Palæoentomology, p. 115.

*Sciara*; Spanish spp. and varr., STROBL, pp. 95-98, Wien. ent. Zeit. xix.

*S. obtusicauda*, p. 95, *morenæ*, p. 97, Spain, STROBL, t. c.; *S. expolita*, Alaska, COQUILLET, p. 392, P. Washington Ac. ii : n. spp.

*Sciophila cinerascens* var. *supposita*, STROBL, p. 98, Wien. ent. Zeit. xix.

*Trichosia parcepilosa*, Spalato, STROBL, p. 650, Wiss. Mitt. Bosnien vii, n. sp.

## CHIRONOMIDÆ.

*Belgica* n. g., p. 106, for *B. antarctica*, *magellanica* n. spp., Patagonia, p. 107, JACOBS, Ann. Soc. ent. Belgique xlv.

*Ceratopogon cantabricus*, p. 169, *morenæ*, *castellanus*, p. 170, *pallidetarsatus*, p. 171, Spain, STROBL, Wien. ent. Zeit. xix; *C. arcticus*, *hirtulus*, p. 396, *cilipes*, p. 397, Alaska, COQUILLET, P. Washington Ac. ii; *C. pachymerus*, Mexico, WILLISTON, p. 224, Biol. Centr.-Amer. Dipt. i : n. spp.

*Chasmatonotus univittatus*, Alaska, COQUILLET, p. 395, P. Washington Ac. ii, n. sp.

*Chironomus*: structure and development, MIALL & HAMMOND (907); *C. tentans*, characters, KIEFFER, p. 828, Ann. Soc. ent. France xxviii.

*C. apfelbecki*, p. 664, *rhacusensis*, p. 665, S.E. Europe, STROBL, Wiss. Mitt. Bosnien vii, n. spp.

*Clunio bicolor*, Normandy, KIEFFER, Bull. Soc. Rouen, Nov. 8th, 1900, n. sp.

*Corynoneura celeripes* and *atra* are sexes of one species, KIEFFER, p. 825, Ann. Soc. ent. France lxxviii.

*Diamesa præcox*, Bitche, KIEFFER, p. 829, t. c. n. sp.

*Eutanypus borealis*, as a midwinter fly in New Mexico, COCKERELL, p. 439, Ent. News Philad. xi.

*Heteromyia clavata*, Mexico, WILLISTON, p. 225, Biol. Centr.-Amer. Dipt. i, n. sp.

- Metriocnemus atratulus*, generic characters, KIEFFER, p. 827, Ann. Soc. ent. France lxviii.  
*Orthocladius kervillei*, Calvados, in salt water, p. 821, *barbatus*, Bitche, p. 824, KIEFFER, t. c. n. spp.  
*Tanypus castellanus*, Spain, STROBL, p. 173, Wien. ent. Zeit. xix, n. sp.  
*Tanytarsus flavipes*, characters, KIEFFER, p. 828, Ann. Soc. ent. France lxviii.  
*Telmatogeton alaskensis*, Alaska, COQUILLET, p. 395, P. Washington Ac. ii, n. sp.  
*Thalassomyia frauenfeldi* var. n. *luteipes*, STROBL, p. 173, Wien. ent. Zeit. xix, n. sp.

### CULICIDÆ, DIXIDÆ.

- General work on *Culicidæ*, with compilation of descriptions and a few new species, GILES (508).  
 Mosquitoes of N. America, generic and specific synopses, general account, natural history, HOWARD (612).  
 Ovary of *Culex*, LÉCAILLON (806).  
 Effects of blood-sucking on development of eggs, and of fecundation on inoculatory powers, BASILI (75).  
 Life history of a mosquito in Queensland, COLEDGE (287).  
 Mosquitoes and malaria, see Economic Entomology, p. 96.  
 Mode of death of mosquitoes by oil and petroleum, LAVERAN (799).  
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 Relation between presence of *Anopheles* and malarial fever in France and Corsica, LAVERAN (801).  
 Mosquitoes and filaria, BANCROFT (61), GRASSI & NOÉ (518), NOÉ (946).  
*Anopheles*, habits of, GRASSI (517); *A. superpictus*, note, NOÉ, p. 154, pl. i, Bull. Soc. ent. Ital. xxxii; *A. maculipennis* Meigen, correct, not *A. clariger* Fab., OSTEN SACKEN, p. 281, Ent. Mag. xxxvi.  
*Anopheles* in Africa, much information as to distribution and habits in the malaria reports of the Royal Society Committee, CHRISTOPHERS (257), DANIELS (310), STEPHENS (1281); distinction of *Anopheles* in the various stages from other mosquitoes, HOWARD (612).  
*Anopheles funestus*, W. Africa, p. 162, *lindesayi*, Punjab, p. 166, GILES, Gnats or Mosquitoes; *A. constani*, Madagascar, LAVERAN, p. 109, C.R. Soc. Biol. lii; *A. paludis*, Sierra Leone, THEOBALD, p. 75, Rep. Malaria Comm. R. Soc. London i : n. spp.  
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*C. mimeticus*, Italy, NOÉ, p. 150, Bull. Soc. ent. Ital. xxxii; *C. willistoni*, N. America, p. 281, *skusii*, Australia, p. 292, *doleschallii*, Java, p. 338, *melanorhinus*, Egypt, p. 342, GILES, Gnats or Mosquitoes : n. spp.  
*Dixa maculata* varr. *subnebulosa*, *dilatata*, STROBL, p. 174, Wien. ent. Zeit. xix.  
*Megarrhina grandiosa*, Mexico, WILLISTON, p. 224, Biol. Centr.-Amer. Dipt. i, n. sp.  
*Panoplites* mentioned (not described) as n. g. for *Culex annulipes* etc., THEOBALD (1316, p. 5).  
*Psorophora ciliata*, early stages, HOWARD, pp. 353-357, cuts, Canad. Ent. xxxii.

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*Corynoscelis eximia*, note on, MIK, pp. 72, 73, t. c.  
*Dilophus femoratus* var. *andalusiacus*, *D. tenuis* var. *minor*, STROBL, p. 93, t. c.  
*Plecia quadrivittata*, Mexico, WILLISTON, p. 222, Biol. Centr.-Amer. Dipt. i, n. sp.  
*Simulia argenteostriata*, Bosnia, STROBL, p. 648, Wiss. Mitt. Bosnien vii, n. sp.

## BLEPHAROCERIDÆ, RHYPHIDÆ.

- Blepharocera capitata*, life-history, larva, pupa, eyes of the imago and mouth-parts, KELLOGG (684).  
*Liponeura doanei*, California, KELLOGG, p. 39, Psyche ix, n. sp.  
*Olbiogaster* sp. near *cognatus*, p. 229, pl. iv, fig. 6, WILLISTON, Biol. Centr.-Amer. Dipt. i.

## TIPULIDÆ.

The *Tipulidæ* of New Zealand, 44 species, HUTTON (631).

- Analogis exoloma*, p. 194, *vitripennis*, *disphana*, *ampla*, p. 195, *constans*, p. 196, N. America, DOANE, J. N. York Ent. Soc. viii, n. spp.  
*Bachypremna similis*, Mexico, WILLISTON, p. 229, Biol. Centr.-Amer. Dipt. i, n. sp.  
*Bittacomorpha clavipes*, legs, colour, habits, BRUES, Biol. Bull. i, pp. 155-160.  
*Chionea nivicola*, N. America, DOANE, p. 188, J. N. York Ent. Soc. viii, n. sp.  
*Cryptolabis bisinuatis* (sic), N. America, DOANE, t. c. n. sp.  
*Cylindrotoma juncta*, Alaska, COQUILLETT, p. 401, P. Washington Ac. ii; *C. splendens*, N. America, DOANE, p. 197, J. N. York Ent. Soc. viii : n. spp.  
*Dicranomyia fasciata*, *monilicornis*, *nigrescens*, New Zealand, HUTTON, p. 34, Tr. N. Zealand Inst. xxxii; *D. ochracea*, *cinerea*, p. 182, *citrina*, *helva*, *isabellina*, p. 183, *brunnea*, *gracilis*, *moniliformis*, p. 184, *fulva*, *stigmata*, *infuscata*, *duplicata*, p. 185, N. America, DOANE, J. N. York Ent. Soc. viii, n. spp.  
*Dicranoptycha borealis*, N. America, DOANE, p. 187, t. c. n. sp.  
*Dicranota argentea*, N. America, DOANE, p. 196, t. c. n. sp.  
*Dolichopeza albipes*=(*sylvicola* Curt.), MIK, p. 145, Wien. ent. Zeit. xix.  
*Elliptera hungarica*, characters, STROBL, p. 660, Wiss. Mitt. Bosnien vii.  
*Eriocera parva*, *austera*, p. 192, *gibbosa*, *velveta*, p. 193, *antennaria*, *aurata*, p. 194, N. America, DOANE, J. N. York Ent. Soc. viii; *E. fasciata*, p. 226, pl. iv, fig. 4, *brunneipes*, fig. 5, *fluvida*, Mexico, *obsoleta*, Honduras, WILLISTON, Biol. Centr.-Amer. Dipt. i : n. spp.  
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*Geranomyia caloptera* var. *obscura*, STROBL, p. 213, Wien. ent. Zeit. xix.  
*G. annulipes*, N. Zealand, HUTTON, p. 35, Tr. N. Zealand Inst. xxxii; *G. distincta*, N. America, DOANE, p. 186, J. N. York Ent. Soc. viii : n. spp.  
*Gnophomyia ferruginea*, Mexico, WILLISTON, p. 226, Biol. Centr.-Amer. Dipt. ii, n. sp.



- Gonomyia minima*, Mostar, STROBL, p. 658, Wiss. Mitt. Bosnien vii ; *G. virgata*, N. America, DOANE, p. 189, J. N. York Ent. Soc. viii : n. spp.
- Gynoplistia formosa*, p. 46, *fulgens*, p. 47, New Zealand, HUTTON, Tr. N. Zealand Inst. xxxii, n. spp.
- Limnobia modesta* and *tristis* varr., STROBL, p. 212, Wien. ent. Zeit. xix ; *L. hercegovinae*, Jablanica, STROBL, p. 662, Wiss. Mitt. Bosnien vii : n. sp.
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- Macromastix fucata*, *pallida*, *montana*, p. 31, *lunata*, *binotata*, p. 32, New Zealand, HUTTON, Tr. N. Zealand Inst. xxxii, n. spp.
- Ornithodes* n. g. near *Tricyphona*, for *O. harrimani* n. sp., Alaska, COQUILLET, p. 400, P. Washington Ac. ii.
- Pachyrhina hudsoni*, N. Zealand, HUTTON, p. 24, Tr. N. Zealand Inst. xxxii, n. sp.
- Phyllolabis obscuris* (sic), N. America, DOANE, p. 192, J. N. York Ent. Soc. viii, n. sp.
- Polyangæus* n. g. *Amalopina*, p. 196, for *P. maculatus* n. sp., N. America, p. 197, DOANE, t. c.
- Rhamphidia levis*, New Zealand, HUTTON, p. 38, Tr. N. Zealand Inst. xxxii, n. sp.
- Rhypholophus crassipes*, Spain, STROBL, p. 214, Wien. ent. Zeit. xix ; *R. flaveolus*, Alaska, COQUILLET, p. 398, P. Washington Ac. ii ; *R. fusiformis*, *manicatus*, p. 187, *lanuginosus*, *fumatus*, p. 188, N. America, DOANE, J. N. York Ent. Soc. viii : n. spp.
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- T. sarajevensis*, Bosnia, STROBL, p. 656, Wiss. Mitt. Bosnien vii ; *T. pseudo-gigantea*, p. 207, *trifasciculata*, p. 208, *morenae*, p. 209, *acuminata*, p. 211, Spain, STROBL, Wien. ent. Zeit. xix ; *T. fulva*, p. 26, *tenera*, p. 29, New Zealand, HUDSON, Tr. N. Zealand Inst. xxxii ; *T. strigata*, p. 402, *tenebrosa*, p. 403, *gelida*, *cineracea*, p. 404, Alaska, COQUILLET, P. Washington Ac. ii ; *T. virgulata*, Mexico, WILLISTON, p. 228, Biol. Centr.-Amer. Dipt. i ; *T. flavo-annulata*, Patagonia, JACOBS, p. 106, Ann. Soc. ent. Belgique xlv : n. spp.
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- Trimicra andalusiaca*, Spain, STROBL, p. 213, Wien. ent. Zeit. xix, n. sp.
- Trochobola variegata*, p. 36, *picta*, p. 37, New Zealand, HUTTON, Tr. N. Zealand Inst. xxxii ; *T. elegans*, N. America, DOANE, p. 186, J. N. York Ent. Soc. viii : n. spp.

## STRATIOMYIDÆ.

Malpighian tubes, *Stratiomys* larva, VANEY (1349).

Hungarian *Stratiomyideæ* (in Hungarian), KERTÉSZ (699).

*Analcocerus hortulanus*, Mexico, WILLISTON, p. 238, Biol. Centr.-Amer. Dipt. i, n. sp.

- Berismyia nigrofemorata*, Mexico, p. 230, pl. iv, fig. 7, WILLISTON, t. c. n. sp.  
*Campeprosopa longicornis*, Mexico, p. 239, pl. iv, fig. 11, WILLISTON, t. c. n. sp.  
*Chrysochloa pulchra*, Mexico, WILLISTON, p. 243, t. c. n. sp.  
*Chrysochroma pulchrum*, p. 233, *latifrons*, p. 234, Mexico, WILLISTON, t. c. n. spp.  
*Chrysomya ænea* and *Ulidia clausa*, synonymy and generic position, MIK, p. 19, Wien. ent. Zeit. xix.  
*Cyphomyia lasiophthalma*, pl. iv, fig. 15, *bicarinata*, p. 244, Mexico, WILLISTON, Biol. Centr.-Amer. Dipt. i, n. spp.  
*Engonia consobrina*, sexes, SHARP, p. 389, Willey Results iv.  
*Hermetia concinna*, p. 241, pl. iv, fig. 12, New Mexico and Mexico, *ceria*, Mexico, p. 242, fig. 13, WILLISTON, Biol. Centr.-Amer. Dipt. i, n. spp.  
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*P. maculatus*, *concinus*, Mexico, id. p. 238, t. c. n. spp.  
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*S. cæruleifrons*, New Jersey, JOHNSON, p. 325, Ent. News Philad. xi, n. sp.  
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*S. erythroceræ* ♂, STROBL, p. 554, Wiss. Mitt. Bosnien vii.

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*Diatomineura auriflua* Don.=(*P. solida* Walk.), RICARDO, p. 119, t. c.  
*D. leucothorax*, Chili, ead. p. 179, t. c. n. sp.  
*Dicrania*; species, *cervus* Wied.=(*comprehensa* Walk.), RICARDO, t. c. p. 100.  
*Erephrosia aureohirta*, Queensland, RICARDO, p. 116, pl. i, fig. 10, t. c.;  
*E. niger*, p. 292, *rufopilosis*, p. 293, *rufescens*, p. 294, S. America, RICARDO, op. cit. vi : n. spp.  
*Goniops chrysocoma*, Osten Sacken (as *Pangonia*)=(*G. hippoboscoides* Aldr.), HINE, p. 392, Ent. News Philad. xi.  
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*P. flavescens*, Brazil, p. 174, pl. i, fig. 6, *P. (Erephrosia) auripes*, Para, p. 176, fig. 12, *fulvitibialis*, p. 177, fig. 11, Brazil, RICARDO, t. c.;  
*P. semiviridis*, Spain, RICARDO, p. 181, pl. i, fig. 7, t. c.; *P. tricolor*, Somaliland, AUSTEN, p. 7, pl. i, fig. 8, P. Zool. Soc. London 1900 : n. spp.  
*Pelecorhynchus darwini*, Chiloe, p. 102, pl. i, fig. 1, *aurantiacus*, Chili, p. 103, fig. 2, RICARDO, Ann. Nat. Hist. v, n. spp.  
*Sackenymia* merged in *Pangonia*, RICARDO, p. 98, t. c.

*Scione*; notes on components, RICARDO, p. 103, t. c.

*S. fuscus*, Bolivia, p. 291, *claripennis*, Peru, p. 292, RICARDO, op. cit. vi : n. spp.

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*Theriopectes politus*, New Jersey, JOHNSON, p. 325, Ent. News Philad. xi, n. sp.

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*Leptidæ*; the palæarctic discussed, BECKER, pp. 97–116 and 176, Ent. Nachr. xxvi.

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*Leptis maculata* var. n. *obscura*, STROBL, p. 578, Wiss. Mitt. Bosnien vii.

*Omphalophora* n. g. p. 106, for *O. oculata*, n. sp., N. W. Siberia, p. 107, BECKER, Ent. Nachr. xxvi.

*Psammorectes vermileo* = (*Leptis cylindracea* Costa), distribution, BEZZI, p. 56, Wien. ent. Zeit. xix.

*Ptiolina fulva*, N. W. Siberia, p. 110, *pelliticornis*, Italy, p. 113, BECKER, Ent. Nachr. xxvi, n. spp.

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*Metatrichia* n. g. for *Scenopinus bulbosus* O. S., COQUILLETT, p. 500, Ent. News Philad. xi.

*Pseudatrichia unicolor*, p. 500, *griseola*, p. 501, New Mexico, COQUILLETT, t. c. n. spp.

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*Asilus trilobus*, Bosnia, STROBL, p. 576, Wiss. Mitt. Bosnien vii, n. sp.

*Daulopogon terricola*, New Jersey, JOHNSON, p. 326, Ent. News Philad. xi, n. sp.

*Holopogon nigrifacies*, Italy, BEZZI, p. 78, Bull. Soc. ent. Ital. xxxii, n. sp.

*Laparus albicinctus*, Barberton, RICARDO, p. 166, Ann. Nat. Hist. vi, n. sp.

*Laphria limbinervis*, Bosnia, STROBL, p. 575, Wiss. Mitt. Bosnien vii ; *L. aureopilosa*, Durban, RICARDO, p. 171, Ann. Nat. Hist. vi : n. spp.

*Laphyra* sp., larval habits in Tunis, SEURAT, pp. 30, 31, Ann. Sci. Nat. xi.

*Lophonotus albofasciatus*, Pretoria, RICARDO, p. 178, Ann. Nat. Hist. vi, n. sp.

*Microstylum glabrum, elegans*, p. 168, Transvaal, *nigrescens*, p. 169, Angola, RICARDO, t. c. n. spp.

*Mochtherus flavipes* ♂, note, MIK, p. 20, Wien. ent. Zeit. xix.

*Ommatius fuscovittatus*, Pretoria, RICARDO, p. 177, Ann. Nat. Hist. vi, n. sp.

*Perissocerus transcaspicus*, p. 144, *cylindricornis*, p. 145, Transcaspian, PORTSCHINSKY, Horæ Soc. ent. Ross. xxxiii, n. spp.

*Promachus albicinctus, bicolor*, Pretoria, DISTANT, p. 173, Ann. Nat. Hist. vi, n. spp.

*Scylaticus rufescens*, Barberton, RICARDO, p. 170, t. c. n. sp.

*Trichioscelis* n. g. *Dasypogonini*, for *T. burmeisteri*, p. 338, *femorata*, p. 339, n. spp., Argentina, RÖDER, Ent. Zeit. Stettin lxi.

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*Anthrax paniscus*, pupal habits, YERBURY, p. xxii, P. ent. Soc. London 1900; *A. edititia*, larval and pupal habits, DAVIDSON, p. 510, Ent. News Philad. xi.

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*Anthepiscopus ribesii*, var. n. *nigripes*, STROBL, p. 564, Wiss. Mitt. Bosnien vii.

*Empis meridionalis*, early stages, KIEFFER, pp. 131-133, Illustr. Zeitschr. Ent. v.

*E. apfelbecki*, p. 567, *thalhammeri*, p. 568, *pseudodecora*, p. 569, *nigritibialis*, p. 570, *trianguligera*, p. 571, Bosnia, STROBL, Wiss. Mitt. Bosnien vii; *E. kerteszi*, Hungary, BEZZI, p. 251, Termes. Fuzetek xxiii; *E. clauda*, p. 407, *pellucida*, p. 408, *fumida*, *infumata*, *brachysoma*, p. 409, *triangula*, p. 410, *conjuncta*, p. 411, Alaska, COQUILLET, P. Washington Ac. ii: n. spp.

*Gloma scopifera*, Alaska, COQUILLET, p. 412, t. c. n. sp.

*Hilara dalmatina*, *ternovens*, p. 572, Bosnia, STROBL, Wiss. Mitt. Bosnien vii; *H. aurata*, Alaska, COQUILLET, p. 411, P. Washington Ac. ii: n. spp.

*Leptopeza setigera*, Italy, BEZZI, p. 82, Bull. Soc. ent. Ital. xxxii, n. sp.

*Microphorus atratus*, p. 412, *flavipilosus*, *crocatus*, p. 413, Alaska, COQUILLET, P. Washington Ac. ii, n. spp.

*Platypalpus diversipes*, *gilvipes*, Alaska, COQUILLET, p. 422, t. c. n. spp.

*Rhamphomyia siebecki*, p. 564, *klekovacensis*, *albidiventris*, p. 565, *anthracinella*, p. 566, Bosnia, STROBL, Wiss. Mitt. Bosnien vii; *R. villipes*, p. 414, *disparilis*, p. 415, *glauca*, *cineracea*, p. 416, *limata*, *barypoda*, p. 417, *albopilosa*, *adversa*, p. 418, *cinefacta*, p. 419, *anthracodes*, *atrata*, p. 420, *macrura*, p. 421, Alaska, COQUILLET, P. Washington Ac. ii: n. spp.

*Sciodromia pectinulata*, Bosnia, STROBL, p. 561, Wiss. Mitt. Bosnien vii, n. sp.

*Tachydromia stroblii* n. n. for *T. beckeri* Strobl nec Mik, Mik, p. 148, Wien. ent. Zeit. xix.

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Note on setulæ acrostichales, MIK, p. 151, Wien. ent. Zeit. xix.

*Aphantotimus* (and probably *Xanthotricha*) merged in *Thrypticus*, WHEELER, p. 30, P. Calif. Ac. ii.

*Asyndetus syntormoides*, Massachusetts, WHEELER, p. 32, P. Calif. Ac. ii, n. sp.

*Campsicnemus degener*, p. 58, *philoctetes*, p. 59, *ædipus*, p. 60, *thersites*, p. 61, N. America, WHEELER, t. c. n. spp.

*Chrysotus barbatus* Loew=(*apicalis* Aldr.), ALDRICH, p. 533, Ent. News Philad. xi.

*Diaphorus spectabilis*=(*approximatus* Aldr.), ALDRICH, t. c.

*Dolichopus barycnemus*, p. 424, *varipes*, p. 425, Alaska, COQUILLET, P. Washington Ac. ii; *D. sincerus*, *misellus*, N. America, MELANDER, p. 136, Canad. Ent. xxxii; *D. partitus*, p. 135, *paluster*, p. 136, *intensus*, p. 137, *calainus*, p. 138, *enigma*, p. 139, *agronomus*, p. 140, *pernix*, p. 141, *pantomimus*, p. 142, *renidescens*, p. 143, *apheles*, p. 144,



- amphericus*, p. 146, N. America, MELANDER & BRUES, Biol. Bull. i : n. spp.
- Gymnopternus mirificus*, Massachusetts, MELANDER, p. 137, Canad. Ent. xxxii, n. sp.
- Hercostomus procerus*, p. 8, pl. i, figg. 9, 10, *impudicus*, p. 10, figg. 11-13, California, WHEELER, P. Calif. Ac. ii ; *H. vetitus*, p. 138, *anarmostus*, p. 139, N. America, MELANDER, Canad. Ent. xxxii : n. spp.
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- Hydrophorus algens*, p. 63, *eldoradensis*, p. 65, *agalma*, p. 66, *magdalene*, p. 67, *sodalis*, p. 68, N. America, WHEELER, t. c. n. spp.
- Hypocharassus* Mik=(*Drepanomyia* Wheeler), *H. gladiator*=(*D. johnsonii* Wheeler), MIK, p. 21, Wien. ent. Zeit. xix ; *Hypocharassus* Mik=(*Drepanomyia* Wh.), *H. gladiator* Mik=(*D. johnsonii* Wh.), ♀ described, WHEELER, pp. 423, 424, Ent. News Philad. xi.
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- Mesorhaga* Schin.=(*Aptorthus* Aldr.), ALDRICH, p. 531, Ent. News Philad. xi.
- Nematoproctus venustus*, N. America, MELANDER, p. 142, Canad. Ent. xxxii, n. sp.
- Neurigona floridula*, p. 72, *lienosa*, p. 73, WHEELER, P. Calif. Ac. ii, n. spp.
- Nothosympycnus* n. g., p. 51, for *N. fortunatus*, p. 52, *vegetus*, p. 53, *sobrinus*, p. 54, *oreas*, p. 55, n. spp., N. America, and *S. nodatus* Loew, WHEELER, t. c.
- Paraclius hybridus*, Massachusetts, MELANDER, p. 141, Canad. Ent. xxxii ; *P. propinquus*, Florida, WHEELER, p. 18, P. Calif. Ac. ii : n. spp.
- Parasyntormon* n. g., p. 41, for *P. asellus*, p. 42, *tagotis*, p. 43, *kinnulus*, p. 44, *emarginatum*, p. 45, *montivagum*, p. 46, n. spp., N. America, and *Sympycnus occidentalis* Aldr., WHEELER, t. c.
- Pelastoneurus neglectus*, p. 12, pl. i, fig. 14, *occidentalis*, fig. 20, *floridanus*, pl. ii, fig. 26, p. 13, *pictipennis*, p. 14, *dissimilipes*, p. 16, *cyaneus*, p. 17, N. America, WHEELER, t. c. ; *P. wheeleri*, Texas, MELANDER, p. 140, Canad. Ent. xxxii : n. spp.
- Polymedon castus*, Arizona, WHEELER, p. 6, P. Calif. Ac. ii, n. sp.
- Porphyrus xiphæres*, *effilatus*, N. America, WHEELER, p. 34, t. c. n. spp.
- Schænocephalus* Mik, queried, WHEELER, p. 69, t. c.
- Sympycnus marcidus*, p. 48, *cuprinus*, p. 50, *pugil*, p. 51, N. America, WHEELER, t. c. n. spp.
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- S. affinis*, p. 38, *strategus*, p. 39, N. America, WHEELER, P. Calif. Ac. ii, n. spp.
- Tachytrechus volitans*, *protervus*, N. America, MELANDER, p. 143, Canad. Ent. xxxii, n. spp.
- Teuchophorus clavigerellus*, Dakota, WHEELER, p. 57, P. Calif. Ac. ii, n. sp.
- Thinophilus achilleus*, Sardinia, MIK, p. 79, Wien. ent. Zeit. xix ; *T. neglectus*, New Jersey, WHEELER, p. 70, P. Calif. Ac. ii : n. spp.
- Thrypticus* Gerst.=(*Aphantotimus* Wh.=*Xanthotricha* Aldr.), ALDRICH, p. 532, Ent. News Philad. xi.

## LONCHOPTERIDÆ.

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## PLATYPEZIDÆ, PIPUNCULIDÆ.

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*P. loewii* n. n. for *fasciatus* Lw., KERTÉSZ, p. 270; *P. arimosus*, Germany, *trochanteratus*, Egypt, p. 221, *trapezoides*, Hungary, p. 223, *fluvialis*, Egypt, p. 224, *straminipes*, Italy, p. 225, *vestitus*, Silesia, p. 230, *ultimus*, Italy, p. 231, *signatus*, Hungary, p. 232, *pilosiventris*, Egypt, p. 236, *vicinus*, p. 238, *disjunctus*, p. 239, *nitidifrons*, p. 241, Egypt, *angustifrons*, Peru, p. 246, *hepaticolor*, Singapore, p. 247, *brunnipennis*, p. 248, *lætus*, p. 249, Peru, BECKER, Berlin. ent. Zeitschr. xlv : n. spp.

## SYRPHIDÆ.

Syrphidæ of Quebec, CHAGNON (233).

*Syrphidæ* attracted by the colours of flowers? PLATEAU (1041).

*Catabomba pyrastræ* bred from *Lepidoptera* pupæ, BLOOMFIELD, p. 244, Ent. Mag. xxxvi.

*Chilosia borealis*, Alaska, COQUILLETT, p. 426, P. Washington Ac. ii, n. sp.

*Criorhina tricolor*, Alaska, COQUILLETT, p. 436, t. c. n. sp.

*Eristalis tenax*, WRIGHT (1419).

*E. croceimaculata*, Patagonia, JACOBS, p. 107, Ann. Soc. ent. Belgique xlv, n. sp.

*Eumerus speculifer*, New Britain, SHARP, p. 390, pl. xxxv, fig. 10, Willey Results iv, n. sp.

*Melanostoma hyalinatum*, larval habits, DE MEIJERE, Ent. Tijdschr. xliiii, p. 8.

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*Microdon pictipenne*, New Britain, SHARP, p. 390, Willey Results iv; *M. sharpii* n. n. for *pictipennis* Sharp nec Macq., MIK, p. 148, Wien. ent. Zeit. xix.

*Platychirus tenebrosus*, p. 428, *aratus*, p. 430, Alaska, COQUILLETT, P. Washington Ac. ii, n. spp.

*Psilota rotundicornis*, Bosnia, STROBL, p. 586, Wiss. Mitt. Bosnien vii, n. sp.

*Syrritta pipiens*, structural notes, WESCHÉ, pp. 33, 34, Knowledge 1900.

*Syrphus bifasciatus* var. n. *trifasciatus*, STROBL, p. 590, Wiss. Mitt. Bosnien vii.

*S. gracilis*, Alaska, COQUILLETT, p. 432, P. Washington Ac. ii, n. sp.

## PHORIDÆ (incl. STETHOPATHIDÆ).

*Phora rufipes*, natural history, KIEFFER, p. 241, Illustr. Zeitschr. Ent. v.

*P. posticata*, Ragusa, STROBL, p. 646, Wiss. Mitt. Bosnien vii; *P. grælandica*, Greenland, LUNDBECK, p. 307, Vid. Medd. 1900 : n. spp.

*Termitoxenia* n. g. *Stethopathidarum*, p. 601, for *T. havilandi*, *heimi*, p. 602, *mirabilis*, *braunsi*, p. 603, n. spp., S. Africa with *Termitidae*, fuller details, pp. 609, 611, pl. iii, WASMANN, Zeitschr. wiss. Zool. lxvii.

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*Cestridæ*: clinical bibliography, HUBER (618).

*Hypoderma bovis* attacking man in Norway, SCHOYEN (1159).

*Gasterophilus equi, salutaris* in Australia, larvæ, FROGGATT, pp. 947-951, pl., Agric. Gaz. N. S. W. xi.

*Gasterophilus epilepsalis*, N. America, larva only, FRENCH, p. 263, Canad. Ent. xxxii, n. sp.

*G. epilepsalis*, protested against, ALDRICH, p. 318, t. c.

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Notes on and replies to Mik's criticisms on his work on the Meigen types of *Anthomyiidæ*, STEIN, pp. 246-248, Wien. ent. Zeit. xix.

Meigen's types, VILLENEUVE (1358) cf. *Exorista*, *Phorocera*, *Masicera*, *Miltogramma*.

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*Muscidæ*: clinical bibliography, HUBER (618).

Physiology of metamorphosis of *Calliphora* and *Cyrtoneura*, BERLESE (103); for other memoirs see Development, p. 88.

Abstract of SASAKI on *Ugimya sericarice*, MÉNÉGAUX (895).

*Anthomyia hyosciami* var. n. *trebinjensis*, STROBL, p. 612, Wiss. Mitt. Bosnien vii.

*A. mystacea*, Alaska, COQUILLET, p. 447, P. Washington Ac. ii, n. sp.

*Aricia pullata*, p. 271, *austriaca*, p. 272, *steinii*, p. 273, Austria, CZERNY, Wien. ent. Zeit. xix; *A. setigera*, Sweden, p. 305, *regalis*, Caucasus, p. 306, *humerella*, Siebenbürgen, p. 307, STEIN, Ent. Nachr. xxvi : n. spp.

*Atherigona flexinervis*, p. 154, *nigripes*, p. 155, *pallicornis*, p. 156, *trilineata*, New Guinea, *exigua*, Singapore, p. 157, STEIN, Termes. Fuzetek xxiii, n. spp.

*Belvoisia luteola*, Puerto Rico, COQUILLET, p. 253, P. U. S. Mus. xxii, n. sp.

*Chirosia glauca*, Alaska, COQUILLET, p. 452, P. Washington Ac. ii, n. sp.

*Chortophila buccata*, habits, PIFFARD, p. 190, Ent. Mag. xxxvi and EVANS, t. c., p. 243.

*C. nuda*, Siebenbürgen, p. 314, *crinitarsata*, Rügen, p. 316, *triticiperda*, Budapest, p. 317, STEIN, Ent. Nachr. xxvi; *C. tarsifimbria*, pp. 249 & 279, *concomitans*, pp. 251 & 287, *pygialis*, p. 252, *excavans*, p. 253, *quintilis*, *rhinotmeta*, pp. 253 & 279, *curtinata*, *rubiginans*, p. 254, *inequa*, pp. 255 & 272, *biumbroso*, pp. 256 & 274, *cyclicans*, p. 256, *discussa*, pp. 257, 277, 282, *insperata*, p. 260, *quinquevirgata*, *longipilis*, p. 261, *interflua*, p. 262, *dilaminata*, p. 263, *nuceicornis*, pp. 264 & 288, *impublicollis*, p. 265, *nigronitens*, *congenerata*, p. 266, *dentiens*, pp. 268 & 290, *dejecta*, p. 273, *gentiana*, *litigata*, p. 274, *impublicollis*, *separabilis*, p. 276, *excavans*, *spatulans*, p. 278, *excubans*, p. 282,

- palmodes*, p. 284, *nasutula*, *diducta*, p. 285, *margaritans*, p. 288, *orbitalis*, p. 289, *retrostimulea*, p. 290, Europe, PANDELLÉ, *Muscides* iii : n. spp.
- Coenosia longitarsis*, Amsterdam, STEIN, p. 323, Ent. Nachr. xxvi; *C. incisa*, p. 146, *pectinata*, *C. (Pygophora) lobata*, p. 147, New Guinea, *C. brevicornis*, p. 149, Singapore, *parvisquama*, p. 150, *pumilio*, p. 151, New Guinea, STEIN, Termes. Fuzetek xxiii; *C. compressicauda*, Celebes, STEIN, p. 391, Ann. Mus. Genova xl; *C. varicornis*, Puerto Rico, COQUILLET, p. 256, P. U. S. Mus. xxii : n. spp.
- Dasyphora saltuum* and *pastorum* distinguished, HOUGH, p. 249, Termes. Fuzetek xxiii.
- Egle sextana*, p. 239, *rondania*, p. 240, *trigonigaster*, p. 242, Europe, PANDELLÉ, *Muscides* iii, n. spp.
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- Gynnochoristomma* subg. n. of *Homalomyia*, STROBL, p. 613, Wiss. Mitt. Bosnien vii.
- Hæmatobia irritans*, its synonyms=(*atripalpis* Bezzi), HOUGH, p. 250, Termes. Fuzetek xxiii.
- Homalomyia scalaris*, larval structures, VOGLER, pp. 273-276, Illustr. Zeitschr. Ent. v.
- H. flavivaria*, Alaska, COQUILLET, p. 446, P. Washington Ac. ii; *H. penicillaris*, p. 205, *obscurinervis*, p. 207, *dasyops*, p. 209, *abnormis*, p. 210, Bolivia, STEIN, Termes. Fuzetek xxiii : n. spp.
- Hydrophoria speculiventris*, p. 221, *patellans*, p. 222, *detergens*, *querenda*, p. 229, *subcalva*, p. 230, *acerba*, *stimulea*, *biciliaris*, p. 232, *bicalcareia*, p. 233, *flabellifera*, p. 234, *uniciliata*, *vacans*, p. 235, *lophota*, p. 236, Europe, PANDELLÉ, *Muscides* iii, n. spp.
- Hyetodesia varipes*, p. 441, *villicrura*, p. 443, Alaska, COQUILLET, P. Washington Ac. ii, n. sp.
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- H. tristriata*, p. 310, *lamelliseta*, p. 312, Genthin, STEIN, Ent. Nachr. xxvi; *H. spiniventris*, p. 449, *simpla*, p. 450, Alaska, COQUILLET, P. Washington Ac. ii : n. spp.
- Hystieria triangulifera*, Patagonia, JACOBS, p. 107, Ann. Soc. ent. Belgique xlv, n. sp.
- Lasiops triseriata*, Trieste, STEIN, p. 309, Ent. Nachr. xxvi; *L. calvicrura*, Alaska, COQUILLET, p. 444, P. Washington Ac. ii : n. spp.
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*Phorocera*, study of Meigen's types, VILLENEUVE, Bull. Soc. ent. France 1900, p. 161.  
*Pollenia atramentaria, depressa*, queried, HOUGH, p. 249, Termes. Fuzetek xxiii.  
*Prosalpia pilitarsis*, Hungary, STEIN, p. 313, Ent. Nachr. xxvi, n. sp.  
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*Sarcophila* larvæ in human intestine, PERRONCITO (1992).  
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- Diptotoxa dalmatina*, Dalmatia, STROBL, p. 628, Wiss. Mitt. Bosnien vii, n. sp.
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- Ensina luculenta*, pl. xii, fig. 17, *consersa*, fig. 18, p. 417, *despecta*, fig. 19, *mediana*, fig. 20, *guttularis*, fig. 21, p. 418, Mexico, WULF, Biol. Centr.-Amer. Dipt. ii, n. spp.
- Epiplatea scutellaris*, California, COQUILLETT, p. 25, J. N. York Ent. Soc. viii, n. sp.
- Euaresta crenulata*, p. 423, *rufula*, p. 424, *angustipennis*, *scitula*, *sobrinata*, p. 425, Mexico, WULF, Biol. Centr.-Amer. Dipt. ii, n. spp.
- Euaresta willistoni* n. n. for *spoliata* Willist. nec Loew; COQUILLETT, p. 24, J. N. York Ent. Soc. vi.
- Fucellia intermedia*, Greenland, LUNDBECK, p. 291, p. 293 cuts, Vid. Medd. 1900, n. sp.
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- Gaurax lancifer*, Puerto Rico, COQUILLETT, p. 265, P. U. S. Mus. xxii, n. sp.
- Giraffomyia* n. g. aberrant near *Phytalmia*, p. 391, for *G. willeyi* n. sp., New Britain, p. 392, pl. xxxv, figg. 12-12b, SHARP, Willey Results iv.
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- Archinycteribia* n. g. p. 30, for *A. actena* n. sp., New Pomerania on *Dobsonia peronii*, p. 31, pl. iii, figg. 6, 8, 12, SPEISER, Arch. Naturg. lxvii.
- Craterina* Olf. = (*Oxypterum* Leach), should be written *Craterhina*, SPEISER, p. 554, Ann. Mus. Genova xl.
- Cyclopodia*; table of species, SPEISER, Ent. Nachr. xxvi, pp. 289-293.
- C. minor*, New Pomerania, *inflatus*, New Guinea, p. 291, *macrura, similis*, New Pomerania, p. 292, SPEISER, t. c.; fuller descriptions, Arch. Naturg. lxvii, p. 51 etc.: n. spp.
- Hippobosca maculata*, synonymical note, SPEISER, p. 560, Ann. Mus. Genova xl.
- Lepopteryx* n. g. *Streblidæ* for *Lipoptena phyllostomatis* Perty, p. 53, and *L. megastigma* n. sp., on *Noctilio dorsatus*, p. 54, pl. iii, fig. 2, SPEISER, Arch. Naturg. lxvi.



- Megistopoda desiderata*, on *Phyllostoma* from Brazil and Cuba, SPEISER, p. 57, pl. iii, fig. 6, t. c.
- Nycteribia* (*Acrocholidia*) *dispar*, Kaiser-Wilhelms-Land, p. 42, *stichotricha*, Nias Island, p. 44, *scissa*, S. Africa, on *Rhinolophus capensis*, p. 45, *N.* (*Listropodia*) *allotopa*, p. 47, *parvula*, p. 48, Sumatra, SPEISER, Arch. Naturg. lxvii, n. spp.
- Nycteribosca* n. g. *Streblidae* for *N. gigantea* n. sp., Bismarck Arch., and *Raymondia kollari* Fr. etc., SPEISER, p. 46, op. cit. lxvi.
- Olfersia macleayi* and other *Hippoboscidae* in Australia, FROGGATT (468).
- O. exornata*, Sumatra, SPEISER, p. 562, Ann. Mus. Genova xl, n. sp.
- Ornithoica*, validity, *O. beccariina*, characters, table of species, SPEISER, pp. 555–560, t. c.
- O. unicolor*, Sumatra, SPEISER, p. 556, t. c. n. sp.
- Paradyschiria* n. g. *Streblidae*, p. 55, for *P. fusca*, n. sp., Columbia, p. 56, pl. iii, fig. 1, SPEISER, Arch. Naturg. lxvi.
- Penicillidia conspicua* n. n. for *westwoodii* Kol. nec Guér., SPEISER, p. 36, op. cit. lxvii.
- P. pachymela*, Somaliland, p. 37, *euxesta* Burma on *Phyllorhina armigera*, p. 39, SPEISER, t. c. ; *P. monoceros*, Germany, SPEISER, p. 278, Illustr. Zeitschr. Ent. v ; full description, Arch. Naturg. lxvii, p. 35 : n. spp.
- Raymondia pagodarum* n. n. for *huberi* Schin., p. 50, *lobulata* n. n. for *kollari* Schin., p. 51, SPEISER, Arch. Naturg. lxvi, n. spp.

## APHANIPTERA (SIPHONAPTERA).

[Cf. HESSE (585), HEYMONS (587), HUBER (618), N. C. ROTHSCILD (1134, 1135).]

The mouth-parts of *Pulex*, HEYMONS (587).

*Ceratophyllus gallinae*, p. 540, *columbae*, *hirundinis*, p. 542, recognised as distinct, characters, genitalia figured, ROTHSCILD, Nov. Zool. vii.

*C. styx* on Sand-Martin, ROTHSCILD, p. 543, pl. ix, t. c. n. sp.

*Hystriophsylla talpæ*, hosts, figure, N. C. ROTHSCILD, p. 257, pl. x, Ent. Rec. xii.

*Pulex avium* : more than one species under this name : (cf. *Ceratophyllus*), ROTHSCILD, Nov. Zool. vii.

*P. madagascariensis*, on *Centetes ecaudatus*, ROTHSCILD, p. 37, Ent. Rec. xii, n. sp.

*Sarcopsylla*, *Pulex*, clinical bibliography, HÜBER (618).

*S. penetrans*, spread in Africa, HESSE (585).

*Typhlopsylla tristis*, Victoria, p. 36, *ingens*, S. Africa, p. 37, ROTHSCILD, Ent. Rec. xii, n. spp.

(E.) *RHYNCHOTA* OR *HEMIPTERA*.

KIRKALDY (729) gives copious nomenclatorial notes which it is impossible for us to deal with in detail; and in (730) gives additions and makes observations on Lethierry & Severin's Catalogue: and proposes new names for a number of genera of Homoptera. The new names are recorded by us, but other synonymy must be sought in the work itself.

Notes and corrections to Reed's work (not yet seen) on Chilian *Hemiptera*, BERG (102).

The stridulation of *Hemiptera*, historical and general account, HANDLIRSCH (554).

Stridulation; the views of Swinton, Goureaux, and others, HANDLIRSCH (555).

## HEMIPTERA-HETEROPTERA.

[The following memoirs relate to *Hemiptera-Heteroptera*, viz.:—BERG (97, 102), BREDDIN (172-176), CAUDELL (230), CHAMPION (235, 511), COCKERELL (279), DISTANT (322-329), HANDLIRSCH (554, 555, 560), HEIDEMANN (572), HORVÁTH (606, 607), HUEBER (622), JAKOWLEFF (656), KIRBY (725), KIRKALDY (727-733), KUHLGATZ (787), MARCHAL (855), MARTIN (863, 864), MEUNIER (904), MONTANDON (917, 918, 920), MONTGOMERY (921), PAULMIER (980), PAZLAWSZKY (981), PLATEAU (1044), REUTER (1105-1109), STROBL (1290).]

*Euctenodes*, discussed and referred to *Diptera*, SPEISER (1260).

## PENTATOMIDÆ.

*Pentatominae*: DISTANT treats the synonymy of this family, especially, but not exclusively, as regards Walker's species, Ann. Nat. Hist. v, pp. 386 etc. The synonymy is not recorded in our pages. DISTANT gives a summary of it, pp. 430-435, t. c.

*Asopinae* and *Tesseratominae* of Walker reviewed, DISTANT (323).

*Dinidorinae*, *Phyllocephalinae*, *Urolabidinae*, and *Acanthosominae* of Walker revised, DISTANT (324).

Synonymy and taxonomy of the *Pentatomidæ* of the Hope collection at Oxford, DISTANT, pp. 807-824, P. Zool. Soc. London. Includes several pages of corrections of generic position.

*Accarana distanti*, New Guinea, BREDDIN, p. 19, Ent. Nachr. xxvi, n. sp.

*Acoloba malleata*, Delagoa Bay, DISTANT, p. 82, Ent. Mag. xxxvi, n. sp.

*Acrozangis* n. g. near *Zangis*, p. 310, for *A. semiprasina* n. sp., Sumatra, p. 311, BREDDIN, Ent. Zeit. Stettin lxi.

*Actuarius* n. g. for *Pentatoma albonotata* Westw., pl. lii, fig. 11, DISTANT, p. 814, P. Zool. Soc. London 1900.

- Ægaleus bechuana*, Centr. Africa, KIRKALDY, p. 78, Entomologist xxxiii, n. sp., but cf. *Antestia variegata*.
- Ælia atricornis* Westw., pl. liii, fig. 8, DISTANT, p. 818, P. Zool. Soc. London 1900; *Æ. melanota*, p. 229, *furcula* Fieb., p. 231, redescribed, REUTER, Ofv. Finska Forh. xlii.
- Æ. similima*, Turkestan, REUTER, t. c., p. 233, n. sp.
- Æschrocoris nodiventris*, Sumatra, BREDDIN, p. 299, Ent. Zeit. Stettin lxi, n. sp.
- Æthus nitens*, Christmas Is., KIRBY, p. 127, pl. xv, fig. i, Monogr. Christmas Island, n. sp.
- Ætius* n. g. for *Atelocerus variegatus* Westw., pl. lii, fig. 8, DISTANT, p. 813, P. Zool. Soc. London 1900.
- Agæus metallicus*, Sumatra, BREDDIN, p. 303, Ent. Zeit. Stettin lxi, n. sp.
- Amyntor pallidus*, Sumatra, BREDDIN, p. 328, t. c. n. sp.
- Anasida funebris*, Natal, DISTANT, p. 59, Ann. Nat. Hist. vi, n. sp.
- Anaxandra bovilla*, Assam, DISTANT, p. 229, t. c. n. sp.
- Antestia variegata* Thunb. (as *Cimex*) = (*Ægaleus bechuana* Kirk.), *Pent. lineaticollis* Stål is a var., DISTANT, p. 174, Tr. ent. Soc. London 1900.
- A. ellenriedi*, Sumatra, BREDDIN, p. 322, Ent. Zeit. Stettin lxi, n. sp.
- Avicenna* n. g. for *Rhynchocoris inquinata* Westw., pl. liii, fig. 1, DISTANT, p. 815, P. Zool. Soc. London 1900.
- Araducta* Wlk. recharacterised, DISTANT, p. 426, Ann. Nat. Hist. v.
- A. bella*, Ceylon, p. 427, *malayana*, Pulo Perang, p. 428, DISTANT, t. c. n. spp.
- Asopus pyrophilus*, characters, BREDDIN, p. 146, Abh. Senckenb. Ges. xxv, n. sp.
- Aspideurus ornatus*, Java, BREDDIN, p. 161, Deutsche ent. Zeitschr. 1900; *A. politus*, Sumatra, BREDDIN, p. 318, Ent. Zeit. Stettin lxi; *A. flavescens*, Rockhampton, BREDDIN, p. 24, Ent. Nachr. xxvi : n. spp.
- Aspongopus nepalensis*, used as food, WATERHOUSE, p. ix, P. ent. Soc. London 1900.
- A. binotatus*, p. 221, *figlinus*, E. Africa, *singhalanus*, Ceylon, p. 222, DISTANT, Ann. Nat. Hist. vi, n. sp.
- Auletrissa* n. n. for *Auletris* Br. 1899, BREDDIN, p. 185, Deutsche ent. Zeitschr. 1900.
- Basicyrptus irroratus*, pl. liii, fig. 6, DISTANT, p. 817, P. Zool. Soc. London 1900.
- B. diversus*, W. Australia, p. 223, *negus*, Arabia and Abyssinia, p. 224, DISTANT, Ann. Nat. Hist. vi, n. spp.
- Biprorulus* n. g. near *Rhynchocoris*, p. 30, for *B. bibax* n. sp., N. S. Wales, p. 31, BREDDIN, Ent. Nachr. xxvi.
- Brachyaulax kukenthali*, Halmahera, BREDDIN, p. 140, Abh. Senckenb. Ges. xxv, n. sp.
- Brachycoris insignis*, Ceylon, DISTANT, p. 420, Ann. Nat. Hist. v, n. sp.
- Brochymena cuspidata*, Costa Rica, DISTANT, p. 689, Tr. ent. Soc. London 1900, n. sp.
- Brachynema ruficorne*, Turkestan, REUTER, p. 235, Ofv. Finska Forh. xlii; *B. venustum*, Oran, MONTANDON, p. 158, Bull. Soc. Bucarest ix : n. spp.
- Brachyplatys biroi*, New Guinea, MONTANDON, p. 414, Termes. Fuzetek xxiii, n. sp.
- Byrsinocoris* n. g. near *Peribyssus*, p. 156, for *B. nigroscutellatus* n. sp., Biskra, p. 157, MONTANDON, Bull. Soc. Bucarest ix.
- Byrsodepsus sundanus*, Sumatra, BREDDIN, p. 334, Ent. Zeit. Stettin lxi, n. sp.
- Cantao rudis* Voll., characters, BREDDIN, p. 139, Abh. Senckenb. Ges. xxv, n. sp.
- Carbula trabifera*, Sumatra, BREDDIN, p. 302, Ent. Zeit. Stettin lxi, n. sp.

- Caura polluta*, Angola, DISTANT, p. 168, Tr. ent. Soc. London 1900, n. sp.
- Chiastosternum* Karsch=(*Asolenidium* Br.), BREDDIN, p. 185, Deutsche ent. Zeitschr. 1900.
- Chlorochroa rubromarginata* (Reut. as *Pentaloma*) redescribed, REUTER, p. 234, Ofv. Finska Forh. xlii.
- Coleotichus sumatranus*, Sockaranda, BREDDIN, p. 276, Ent. Zeit. Stettin lxi, n. sp.
- Coptosoma accensitum, paradoxum*, characters as distinct from *pygmcum*, MONTANDON, pp. 535, 536, Ann. Mus. Genova xl; *C. respersum* ♂, p. 418, *C. insulanum* var. n. *detectum*, p. 419, MONTANDON, Termes. Fuzetek xxiii.
- C. bullatum*, p. 416, *annulipes*, p. 417, Madagascar, *stabilitum*, New Guinea, p. 419, MONTANDON, t. c.; *C. centronotatum*, p. 531, *disso-lutum*, p. 533, *impicticolle*, p. 537, Sumatra, MONTANDON, Ann. Mus. Genova xl : n. spp.
- Cresphontes monsoni*, pl. lii, fig. 6, DISTANT, p. 814, P. Zool. Soc. London 1900.
- C. rufescens*, Java, BREDDIN, p. 163, Deutsche ent. Zeitschr. 1900, n. sp.
- Cuspicona recurvicornis*, p. 28, *forticornis*, p. 29, N. S. Wales, BREDDIN, Ent. Nachr. xxvi, n. spp.
- Cyclopelta parva*, China, DISTANT, p. 220, Ann. Nat. Hist. vi, n. sp.
- Cydnius sahlbergi*, Corfu, REUTER, p. 222, Ofv. Finska Forh. xlii, n. sp.
- Dalpada trimaculata* ♀, BREDDIN, p. 142, Abh. Senckenb. Ges. xxv.
- Dictyotus pallipes*, pl. lii, fig. 9, DISTANT, p. 810, P. Zool. Soc. London 1900.
- Dividor dispar* Westw. referred to *Hyrmine*, description, BREDDIN, p. 23, Ent. Nachr. xxvi.
- Diploxiphus* subg. n., cf. *Lyramorpha*.
- Dismegistus funebris*, Kilimanjaro, DISTANT, p. 169, pl. ii, fig. 8, Tr. ent. Soc. London 1900, n. sp.
- Dorpius* n. g. *Pentatominae*, p. 164, for *D. typicus*, pl. ii, fig. 3, Congo, *indicus*, Punjab, fig. 4, n. spp., p. 165, DISTANT, t. c.
- Ectinopus opacus*, Costa Rica, DISTANT, p. 688, t. c. n. sp.
- Elapheozygum* n. g. near *Plataspis*, p. 120, for *E. goetzei* n. sp., E. Africa, p. 125, KUHLGATZ, SB. Ges. naturf. Berlin 1900.
- Elasmotethus nebulosus, nilgirensis*, p. 231, *lewisi*, p. 232, E. India, DISTANT, Ann. Nat. Hist. vi, n. sp.
- Embolosterna olivacea*, Borneo, HORVÁTH, p. 366, Termes. Fuzetek xxiii, n. sp.
- Emphylocoris* n. g. near *Psacasta*, p. 217, for *E. testaceus* n. sp., Turkestan, p. 218, REUTER, Ofv. Finska Forh. xlii.
- Eurinome lata*, Ternate, BREDDIN, p. 142, Abh. Senckenb. Ges. xxv, n. sp.
- Eurydema lineola* (Bär. as *Strachia*), redescribed, p. 236, *E. rugulosa* var. n. *nigrorubra*, p. 237, REUTER, Ofv. Finska Forh. xlii.
- Eurygaster integriceps*, varieties, REUTER, p. 219, t. c.
- Eusarcoris egenus*, China, JAKOWLEFF, p. 522, Horæ Soc. ent. Ross. xxxiv ; *E. capreolus*, Sumatra, BREDDIN, p. 301, Ent. Zeit. Stettin lxi : n. spp.
- Eusthenes thoracicus*, Assam, DISTANT, p. 61, Ann. Nat. Hist. vi, n. sp.
- Fernelius* n. g. *Pentatominae*, for *F. indicus* n. sp., Burma etc., DISTANT, p. 173, Tr. ent. Soc. London 1900.
- Frisimelica* n. g. near *Megarhynchus*, p. 225, for *Cimex signatus* Fab., DISTANT, Ann. Nat. Hist. vi.
- Geotomus laticollis*, Tunis, REUTER, p. 223, Ofv. Finska Forh. xlii, n. sp.
- Glypsus sparsus*, pl. liii, fig. 5, DISTANT, p. 817, P. Zool. Soc. London 1900.
- Gonopis bantu*, E. Africa, DISTANT, p. 224, Ann. Nat. Hist. vi, n. sp.
- Gordonerius* n. g. for *Opломus lineatus* Walk., DISTANT, p. 56, t. c.



- Halyabbas* n. g. *Pentatominae*, for *H. unicolor* n. sp., Lombok, p. 164, pl. ii, fig. 2, DISTANT, Tr. ent. Soc. London 1900.
- Halyomorpha ornativentris*, Sumatra, BREDDIN, p. 296, Ent. Zeit. Stettin lxi; *H. longiceps*, Ternate, BREDDIN, p. 143, pl. ix, fig. 3, Abh. Senckenb. Ges. xxv : n. spp.
- Hoplistodera recurva*, India, DISTANT, p. 170, pl. ii, fig. 9, Tr. ent. Soc. London 1900, n. sp.
- Hyllus fasciatus*, Ceylon, DISTANT, p. 394, Ann. Nat. Hist. v, n. sp.
- Hyrmine minor*, Sumatra, BREDDIN, p. 306, Ent. Zeit. Stettin lxi, n. sp.
- Ilerda pallescens*, pl. lii, fig. 10, DISTANT, p. 812, P. Zool. Soc. London.
- I. sudana*, Africa, DISTANT, p. 82, Ent. Mag. xxxvi, n. sp.
- Ilipla natalicola*, Natal, DISTANT, p. 82, t. c. n. sp.
- Irochrotus caspius*, *caucasicus*, p. 209, *lanatus*, p. 210, *incisus* Stål (as *Arctocoris*), p. 211, redescribed, REUTER, Ofv. Finska Forh. xlii.
- I. excisus*, Algeria, REUTER, p. 211, t. c. n. sp.
- Jalla subdilata*, Algeria, REUTER, p. 238, t. c. n. sp.
- Kalula* n. g. for *Ælia varicornis* Westw., pl. lii, fig. 4, DISTANT, p. 809, P. Zool. Soc. London 1900.
- Lathrædæus* n. g. near *Cresphontes*, p. 25, for *L. speculator* n. sp., New Guinea, p. 26, BREDDIN, Ent. Nachr. xxvi.
- Leovitus* n. g. for *Rhaphigaster macracanthus* Dall., DISTANT, p. 425, Ann. Nat. Hist. v.
- Lincus discessus*, Costa Rica, DISTANT, p. 688, Tr. ent. Soc. London 1900, n. sp.
- Lyramorpha* revised with subg. n. *Lyrodes*, p. 345, for most of the species, and *Diploxiphus*, p. 352, subg. n. for *L. maculifera* Tryon, HORVÁTH, pp. 341–353, Termes. Fuzetek xxiii; *L. picta*, *vollenhovii*, distinguished, DISTANT, p. 379, Ann. Nat. Hist. vi.
- L.* (*Lyrodes* subg. n.), *impar*, *persimilis*, p. 346, *breddini*, p. 347, New Guinea, HORVÁTH, Termes. Fuzetek xxiii; *L. basalis*, New Guinea, HORVÁTH, p. 633, Semon Forschungsreisen v; *L. soror*, p. 36, New Guinea, *parens*, p. 37, Queensland, BREDDIN, Ent. Nachr. xxvi : n. spp.
- Lyrodes* subg. n., cf. *Lyramorpha*.
- Malgassus* n. g. near *Sepina*, p. 367, for *M. hypoleucus* n. sp., Madagascar, p. 368, HORVÁTH, Termes. Fuzetek xxiii.
- Madegaschia punctata*, Madagascar, MONTANDON, p. 415, t. c. n. sp.
- Melampodius* n. g. for *Atelocerus cervicornis* Westw., pl. liii, fig. 10, DISTANT, p. 817, P. Zool. Soc. London 1900.
- Menaccarus ciliosus* Stål, p. 225, *arenicola* (Scholtz), p. 226, *dohrmianus* (Muls. Rey), p. 227, *divaricatus* Jak., p. 228, redescribed, REUTER, Ofv. Finska Forh. xlii.
- M. deserticola*, Astrakhan, *transparens*, Transcaspien, JAKOWLEFF, p. 518, Horæ Soc. ent. Ross. xxxiv, n. spp.
- Menestheus semoni*, Australia, HORVÁTH, p. 631, Semon Forschungsreisen v, n. sp.
- Menida atkinsoni*, India, DISTANT, p. 171, pl. ii, fig. 10, Tr. ent. Soc. London 1900; *M. labecula*, Ceylon, DISTANT, p. 396, Ann. Nat. Hist. v : n. spp.
- Microdeuterus dohrni*, Sumatra, BREDDIN, p. 335, Ent. Zeit. Stettin lxi, n. sp.
- Mormidea scutellata*, pl. lii, fig. 7, DISTANT, p. 811, P. Zool. Soc. London 1900.
- Neodius ellenriederi*, p. 292, *dohrni*, p. 294, *schultheissi*, p. 295, Sumatra, BREDDIN, Ent. Zeit. Stettin lxi, n. spp.
- Nessula* n. g. near *Zangis*, p. 313, for *N. sponsa* n. sp., Sumatra, p. 315, BREDDIN, t. c.
- Nezara viridula*, varr. and synonymy, HORVÁTH, p. 632, Semon Forschungsreisen v.

- N. sahlbergi*, Amu Daria, REUTER, p. 236, Ofv. Finska Forh. xlii; *N. æthiops*, Tanganika, DISTANT, p. 170, Tr. ent. Soc. London 1900 : n. spp.
- Ochrophara montana*, India, DISTANT, p. 165, t. c. n. sp.
- Ocirrhoë roei*, pl. lii, fig. 12, *virescens*, pl. liii, fig. 7, DISTANT, p. 815, P. Zool. Soc. London 1900.
- O. lutescens*, K. George Sound, DISTANT, p. 422, Ann. Nat. Hist. v, n. sp.
- Oncomeris vicinus*, New Britain, HORVÁTH, p. 358, Termes. Fuzetek xxiii, n. sp.
- Opatrocynus* n. g. near *Brachypelta*, for *O. cryptocephalus* n. sp., Sumatra, BREDDIN, p. 289, Ent. Zeit. Stettin lxi.
- Orsilochus bajulans*, Costa Rica, DISTANT, p. 687, Tr. ent. Soc. London 1900, n. sp.
- Orthoschizops assimilis*, fig. 2, *rugosus*, fig. 3, DISTANT, p. 809, P. Zool. Soc. London 1900.
- Otantestia* n. g. near *Antestia*, p. 324, for *P. pulchra* Dall, and *A. modificatu* Dist., BREDDIN, Ent. Zeit. Stettin lxi.
- Pachycoris*, stridulating organs, HANDLIRSCH, pp. 131-134, Ann. Hofmus. Wien xv.
- Paramenestheus* n. g. near *Menestheus*, p. 20, for *P. terricolor* n. sp., N. S. Wales, p. 21, BREDDIN, Ent. Nachr. xxvi.
- Paranotius* n. g. near *Notius*, p. 17, for *P. punctatissimus* n. sp., N. S. Wales, p. 18, BREDDIN, t. c.
- Palomena unicolor*, pl. lii, fig. 5, DISTANT, p. 811, P. Zool. Soc. London 1900.
- Parodius* n. g. *Pentatominae*, p. 166, for *P. typicus*, Philippines, *mouhoti*, Cambodia, pl. ii, fig. 6, p. 167, n. spp., DISTANT, Tr. ent. Soc. London 1900.
- Pentatoma punctaria* Stål, referred to *Ænopia*, and = (*Sciocoris odiosus* Butl.), DISTANT, p. 174, t. c.; *P. harrisi* Westw., pl. liii, fig. 2, *lateralis*, fig. 9, DISTANT, p. 818, P. Zool. Soc. London 1900; *P. inclusa* Dohrn, redescribed as *Peribalus inclusus*, REUTER, p. 233, Ofv. Finska Forh. xlii.
- P. grossepunctatum*, Christmas Is., KIRBY, p. 128, pl. xv, fig. 2, Monogr. Christmas Island, n. sp.
- Pisena* n. g. near *Sepina*, p. 372, for *P. longirostris* n. sp., Madagascar, p. 373, HORVÁTH, Termes. Fuzetek xxiii.
- Platynopus parvus*, p. 66, *scutellatus*, p. 67, W. Africa, DISTANT, Ann. Nat. Hist. vi; *P. borneensis*, Borneo, DISTANT, p. 696, Tr. ent. Soc. London 1900 : n. spp.
- Platysolen obscurus* Sahlb. is var. of *Neottiglossa pusilla* Gmel., REUTER, p. 233, Ofv. Finska Forh. xlii.
- Plautia splendens*, Japan, DISTANT, p. 171, Tr. ent. Soc. London 1900, n. sp.
- Plexippus affinis*, India, DISTANT, p. 387, Ann. Nat. Hist. v, n. sp.
- Plisthenes ventralis*, *dilatatus*, characters queried, DISTANT, p. 380, Ann. Nat. Hist. vi.
- P. confusus*, p. 361, *moluccanus*, Moluccas, *australis*, Australia, p. 362, *ventralis*, New Guinea, p. 364, HORVÁTH, Termes. Fuzetek xxiii, n. sp.
- Podisus neglectus*, pl. liii, fig. 4, DISTANT, p. 817, P. Zool. Soc. London 1900.
- Podops latiuscula*, *sororcula*, p. 282, *inermiceps*, p. 284, Sumatra, BREDDIN, Ent. Zeit. Stettin lxi, n. spp.
- Prionocompastes* n. g. near *Compastes*, p. 165, for *P. salebrosus* n. sp., Java p. 166, BREDDIN, Deutsche ent. Zeitschr. 1900.
- Psacasta lethierryi* Put. referred to *Periphima* and redescribed, REUTER p. 216, Ofv. Finska Forh. xlii.
- P. affinis*, Sarepta, REUTER, p. 214, t. c. n. sp.

- Pudacus bovillus*, Costa Rica, DISTANT, p. 689, Tr. ent. Soc. London 1900, n. sp.
- Pygoplatys montanus*, Borneo, DISTANT, p. 696, t. c. n. sp.
- Rhynchocoris alatus*, India, DISTANT, p. 172, pl. ii, fig. 12, t. c.; *R. margininotatus*, Sumatra, BREDDIN, p. 325, Ent. Zeit. Stettin lxi : n. spp.
- Rhynchotmetus* n. g. near *Sepina*, p. 368, for *R. typicus* n. sp., Madagascar, p. 369, HORVÁTH, Termes. Fuzetek xxiii.
- Sabæus kukenthali*, Celebes, BREDDIN, p. 145, pl. ix, fig. 4, Abh. Senckenb. Ges. xxv, n. sp.
- Saceseurus* n. g. near *Aspideurus*, p. 320, for *S. bicolor* n. sp., Sumatra, p. 321, BREDDIN, Ent. Zeit. Stettin lxi.
- Sastragala murreeana*, *edessoides*, p. 228, *hampsoni*, p. 229, E. India, DISTANT, Ann. Nat. Hist. vi, n. spp.
- Scaptocoris castaneus* Perty, note on, DISTANT, p. 688, Tr. ent. Soc. London 1900.
- S. talpa*, Guatemala, CHAMPION, p. 256, Ent. Mag. xxxvi, n. sp.
- Scoparipes minor*, Sumatra, BREDDIN, p. 287, Ent. Zeit. Stettin lxi, n. sp.
- Sehirus horvathi*, Tunis, REUTER, p. 221, Ofv. Finska Forh. xlii, n. sp.
- Sepina flaviceps*, p. 370, *gularis*, p. 371, Madagascar, HORVÁTH, Termes. Fuzetek xxiii, n. spp.
- Severiniella*, *Heterocrates* and allies, table, KUHLGATZ, pp. 131–137, SB. Ges. naturf. Berlin 1900.
- Solenostethium lynceum* (Fabr. as *Cimex*) *ledereri* (Fieb. as *Cæloglossa*), redescribed, REUTER, pp. 212, 213, Ofv. Finska Forh. xlii.
- Sphærocoris unicolor* Dall. = (*Chionosternum mutabile* Karsch), BREDDIN, p. 185, Deutsche ent. Zeitschr. 1900.
- Spudeus parvulus*, pl. lii, fig. 1, DISTANT, p. 809, P. Zool. Soc. London 1900.
- Stenozygum erythrasis* var., BREDDIN, p. 22, Ent. Nachr. xxvi.
- S. miniatulum*, Australia, DISTANT, p. 169, pl. ii, fig. 7, Tr. ent. Soc. London 1900, n. sp.
- Stibaropus subglaber*, Sumatra, BREDDIN, p. 286, Ent. Zeit. Stettin lxi, n. sp.
- Stictocarenum suffusum*, King Is., DISTANT, p. 230, Ann. Nat. Hist. vi, n. sp.
- Stronachlachar* n. n. for *Aleria* Stål nec Marsh., KIRKALDY, p. 242, Entomologist xxxiii.
- Tamolia* n. g. near *Plisthenes*, for *Lyramorpha ramifera* Walk., HORVÁTH, p. 365, Termes. Fuzetek xxiii.
- T. horvathi* n. n. for *T. ramifera* Horv. nec Walk., DISTANT, Ann. Nat. Hist. vi, p. 379, n. sp.
- Tarisa setulosa*, Biskra, MONTANDON, p. 156, Bull. Soc. Bucarest ix, n. sp.
- Tesseratomina*; genera tabulated, HORVÁTH, pp. 339, 340, Termes. Fuzetek xxiii.
- Tholagmus nigricornis*, Turkestan, REUTER, p. 220, Ofv. Finska Forh. xlii, n. sp.
- Tolumnia immaculata*, India and Ceylon, DISTANT, p. 168, Tr. ent. Soc. London 1900, n. sp.
- Trinacavellius* n. g. *Discocephalinae* for *Sciocoris galapagoensis* Butl., figured, pl. ii, fig. 1, DISTANT, t. c. p. 163.
- Tropicorypha signata*, S. Africa, DISTANT, p. 168, t. c. n. sp.
- Urochela distincta*, China, DISTANT, p. 226, Ann. Nat. Hist. vi, n. sp.
- Utana* n. g. for *Caspiconia suprema* Walk., DISTANT, p. 423, Ann. Nat. Hist. v.
- Vitellus orientalis*, India, DISTANT, p. 172, pl. ii, fig. 11, Tr. ent. Soc. London 1900; *V. antemna*, Queensland, BREDDIN, p. 33, Ent. Nachr. xxvi : n. spp.
- Zangis ludekingi* variation, BREDDIN, p. 161, Deutsche ent. Zeitschr. 1900.

## COREIDÆ.

In Rhynchotal notes vii (325), DISTANT revises Walker's work in this family.

*Acanthocolpura brunnea*, N. S. Wales, BREDDIN, p. 40, Ent. Nachr. xxvi, n. sp.

*Agraphopus suturalis*, Turcomania, *virescens*, Turkestan, REUTER, p. 278, Ofv. Finska Forh. xlii, n. spp.

*Anasa perfusa*, Costa Rica, DISTANT, p. 691, Tr. ent. Soc. London 1900, n. sp.

*Anoplocnemis signata*, p. 373, *whytei*, p. 374, E. Africa, DISTANT, Ann. Nat. Hist. vi, n. spp.

*Brachylybas marmoratus*, Halmahera, BREDDIN, p. 150, pl. ix, fig. 8, Abh. Senckenb. Ges. xxv, n. sp.

*Chorosoma schillingi*, *macilentum*, redescribed, REUTER, p. 280, Ofv. Finska Forh. xlii.

*Chorosoma longicolle*, Turcomania, REUTER, p. 279, t. c. n. sp.

*Colpura speculatrix*, Borneo, p. 152, pl. ix, fig. 6, *planiceps*, Celebes, fig. 7, p. 153, BREDDIN, Abh. Senckenb. Ges. xxv ; *C. luteifusula*, p. 204, Sumatra, *nigrifusula*, p. 206, *scrutatrix*, p. 207, Borneo, *imbellis*, Malacca, p. 209, *inermicollis*, Borneo, *tuberculicollis*, p. 210, *angulicollis*, *armillata*, p. 211, *stenocephala*, p. 212, *stenocephaloides*, p. 213, Malacca, *schultheissi*, Sumatra, p. 214, BREDDIN, Rev. Ent. franc. xix ; *C. sortita*, New Guinea, HORVÁTH, p. 635, Semon Forschungsreisen v : n. spp.

*Coreus bos* var. n. *erecticornis*, REUTER, p. 268, Ofv. Finska Forh. xlii.

*Coriomeris* Westw. = (*Dasycoris* Dall. = *Merocoris* Hahn), p. 270, varr. n. pp. 273-275, REUTER, Ofv. Finska Forh. xlii.

*C. vitticollis*, Caucasus, p. 270, *pallidus*, Transcaspian, p. 270, *spinolæ* (Costa), p. 274, S. Europe, REUTER, t. c. n. spp.

*Corizus hyoscyami* var. n. *limbatus*, REUTER, p. 275, Ofv. Finska Forh. xlii.

*Dalader horsfieldi*, Java, DISTANT, p. 376, Ann. Nat. Hist. vi ; *D. shelfordi*, Borneo, DISTANT, p. 697, Tr. ent. Soc. London 1900 : n. spp.

*Elasmopoda affinis*, E. Africa, DISTANT, p. 368, Ann. Nat. Hist. vi, n. sp.

*Evagrius* n. g. near *Holopterna*, for *E. gladius* n. sp., E. Africa, DISTANT, p. 369, t. c.

*Holopterna ellioti*, E. Africa, DISTANT, p. 368, t. c. n. sp.

*Homalocolpura* n. g., p. 155, for *H. bibax* n. sp., Celebes, p. 156, pl. ix, fig. 10 ; *H. edax* n. sp., Java, added, p. 201, BREDDIN, Abh. Senckenb. Ges. xxv.

*Homæocerus ornativentris*, Borneo, BREDDIN, p. 149, pl. ix, fig. 5, t. c. n. sp.

*Liorhyssus hyalinus* var. n. *rubricatus*, REUTER, p. 276, Ofv. Finska Forh. xlii.

*Lybastes* n. n. for *Lybas* Dall. nec Chev., KIRKALDY, p. 240, Entomologist xxxiii.

*Lygeopharus ocellatus*, Halmahera, BREDDIN, p. 154, pl. ix, fig. 9, Abh. Senckenb. Ges. xxv, n. spp.

*Macevethus persicus*, characters, *M. lineola* var. n. *ruficornis*, REUTER, p. 277, Ofv. Finska Forh. xlii.

*Melucha biolleyi*, Costa Rica, DISTANT, p. 374, Ann. Nat. Hist. vi, n. sp.

*Menardus* n. g. for *Meropachys notatus* Walk., DISTANT, p. 366, t. c.

*Microtelocerus* n. g., p. 268, near *Ceraleptus*, for *M. testaceus* n. sp., Turkestan, p. 269, REUTER, Ofv. Finska Forh. xlii.

*Mictis limbativentris*, *farinulenta*, males, DISTANT, p. 371, Ann. Nat. Hist. vi ; *M. valgus* var. *rufipes*, CANNAVIELLO, p. 305, Bull. Soc. ent. Ital. xxxii.



- M. oceanensis*, New Hebrides, DISTANT, p. 372, Ann. Nat. Hist. vi, n. sp.  
*Mozena alata*, Costa Rica, DISTANT, p. 375, t. c. n. sp.  
*Notobitus papuensis*, New Guinea, HORVÁTH, p. 635, Semon Forschungsreisen v, n. sp.  
*Ochrochira lunata*, China, DISTANT, p. 370, Ann. Nat. Hist. vi, n. sp.  
*Pachycephalini*; genera tabulated, BREDDIN, pp. 194, 195, Rev. Ent. franc. xix.  
*Pachycolpura* n. g. for *P. manca* n. sp., N. S. Wales, BREDDIN, p. 39, Ent. Nachr. xxvi.  
*Paryphes perpictus*, Costa Rica, DISTANT, p. 692, Tr. ent. Soc. London 1900, n. sp.  
*Pendulinus homæoceroides*, Perak, BREDDIN, p. 169, Deutsche ent. Zeitschr. 1900; *P. cardinalis*, Celebes, BREDDIN, p. 157, Abh. Senckenb. Ges. xxv : n. spp.  
*Prionolomia gigas* ♀, BREDDIN, p. 169, Deutsche ent. Zeitschr. 1900.  
*P. mandarina*, China, DISTANT, p. 367, Ann. Nat. Hist. vi, n. sp.  
*Pternistria macromera* male dimorphism, BREDDIN, p. 167, Deutsche ent. Zeitschr. 1900.  
*Riptortus serripes* Fabr., from Thursday Island, description, HORVÁTH, p. 637, Semon Forschungsreisen v; *R. eugenieæ*, characters, BREDDIN, p. 158, Abh. Senckenb. Ges. xxv.  
*Sciophyrus sulcigerus*, p. 198, *horvathi*, p. 199, New Guinea, BREDDIN, Rev. Ent. franc. xix; *S. diminutus*, Thursday Island, HORVÁTH, p. 635, Semon Forschungsreisen v : n. spp.  
*Stictopleurus angustus*, Turkestan, REUTER, p. 276, Ofv. Finska Forh. xlii, n. sp.  
*Strobilotoma typhæcornis* var. n. *divergens*, REUTER, p. 270, t. c.  
*Tachycolpura* n. g. for *Lybas penicillatus* Walk., BREDDIN, p. 215, Rev. Ent. franc. xix.  
*Tongorma* n. n. for *Craspedum*, Am. nec Ramb., KIRKALDY, p. 242, Entomologist xxxiii.  
*Typhlocolpura* n. g. for *S. decoratula* n. sp., Celebes, BREDDIN, p. 195, Rev. Ent. franc. xix.  
*Xanthocolpura* n. g. for *X. venosa* n. sp., Borneo, BREDDIN, p. 196, t. c.

## LYGÆIDÆ.

- Astacops major*, Halmahera, BREDDIN, p. 159, Abh. Senckenb. Ges. xxv; *A. (Scopiastes) laticeps*, N. S. Wales, BREDDIN, p. 170, Deutsche ent. Zeitschr. 1900 : n. spp.  
*Geocoris cardinalis* Put. described, REUTER, p. 244, Ofv. Finska Forh. xlii.  
*Ichnodemus venosus*, New Guinea, BREDDIN, p. 41, Ent. Nachr. xxvi, n. sp.  
*Leptodemus* n. g. for *Macropterna minuta* Jak., varieties, REUTER, pp. 244, 245, Ofv. Finska Forh. xlii.  
*Lygæus subrufescens*, pl. xv, fig. 3, p. 128, KIRBY, Monogr. Christmas Island; *L. (Melanocoryphus) sefrensis*, Algeria, REUTER, p. 243, Ofv. Finska Forh. xlii : n. spp.  
*Microcanecoris* n. g. near *Canecoris*, for *M. nanus* n. sp., Sumbawa, BREDDIN, p. 171, Deutsche ent. Zeitschr. 1900.  
*Pachygrontha vidua*, New Guinea, HORVÁTH, p. 638, Semon Forschungsreisen v, n. sp.  
*Phoronastes* n. n. for *Phoroneus* Stål nec Raf., KIRKALDY, p. 242, Entomologist xxxiii.

## PYRRHOCORIDÆ.

- Antilocbus coquebertii*, predaceous habits, KIRKALDY, p. 295, Entomologist xxxiii; *A. histrionicus*, characters, BREDDIN, p. 161, Abh. Senckenb. Ges. xxv.

- A. maximus*, Sumatra, BREDDIN, p. 172, Deutsche ent. Zeitschr. 1900, n. sp.  
*Dindymus decolor*, N. Guinea, BREDDIN, p. 173, t. c., n. sp.  
*Megadysdercus* subg. n. of *Dysdercus*, for *D. mesiostigma* Dist., BREDDIN, p. 162, Abh. Senckenb. Ges. xxv.  
*Myrmoplasta potteri*, Abyssinia, MARTIN, p. 20, Bull. Mus. Paris 1900, n. sp.  
*Theraneis oleosa*, Costa Rica, DISTANT, p. 692, Tr. ent. Soc. London 1900, n. sp.

## PHYMATIDÆ.

- Macrocephalus arizonicus*, Tucson, COCKERELL, p. 66, Entomologist xxxiii, n. sp., but t. c. p. 201 said to be *uhleri* Handl.  
*Phymata salicis*, Arizona, COCKERELL, p. 66, Entomologist xxxiii, n. sp.

## BERYTIDÆ, TINGITIDÆ, ARADIDÆ.

- Alcetha* n. n. for *Dictyonota* L. & S., KIRKALDY, p. 241, Entomologist xxxiii.  
*Berytinus* n. n. for *Berytus* L. & S., KIRKALDY, p. 241, Entomologist xxxiii.  
*Brachyrhynchus lignicolus*, Christmas Is., KIRBY, p. 129, pl. xv, fig. 4, Monogr. Christmas Island, n. sp.

## HYDROMETRIDÆ.

- Gerris femorata*, p. 163, *pulchra*, *ciliata*, p. 164, characters, BREDDIN, Abh. Senckenb. Ges. xxv.  
*G. severini*, Congo, KIRKALDY, p. 432, Ann. Soc. ent. Belgique xlv;  
*G. kampaspe*, *darthula*, New Guinea, KIRKALDY, p. 805, Ann. Mus. Genova xl : n. spp.  
*Halobates*, 500 miles from land, WALKER, p. 115, Ent. Mag. xxxvi.  
*Hydrometra lineata* Say (omitted from L. & S. catalogue) characters, habits, egg, MARTIN, pp. 70-76, cuts, Canad. Ent. xxxii; *H. martini* n. n. for *lineata* Say nec Esch., KIRKALDY, p. 176, Entomologist xxxiii.  
*H. papuana*, New Guinea, KIRKALDY, p. 807, Ann. Mus. Genova xl, n. sp.  
*Mesovelvia orientalis*, Sumatra, KIRKALDY, p. 808, t. c. n. sp.  
*Microvelia waelbroecki*, *briseis*, Congo, KIRKALDY, p. 433, Ann. Soc. ent. Belgique xlv; *M. gestroi*, p. 806, *loriae*, p. 807, New Guinea, KIRKALDY, Ann. Mus. Genova xl : n. spp.  
*Rhagovelia peggie*, New Guinea, KIRKALDY, p. 805, Ann. Mus. Genova xl;  
*R. tayloriella*, Jamaica, KIRKALDY, p. 72, Entomologist xxxiii, n. sp.  
*Trochopus plumbeus* Uhl. = (*marinus* Carp.), KIRKALDY, pp. 70-72, Entomologist xxxiii.

## REDUVIIDÆ (incl. EMESIDÆ NABIDÆ).

- N. American "Kissing bugs," HOWARD (616).  
*Amulius armillatus*, Borneo, BREDDIN, p. 168, Abh. Senckenb. Ges. xxv, n. sp.  
*Arcesius longiceps* var. BREDDIN, p. 171, t. c. n. sp.  
*Archilestidium* n. g. *Acanthaspidini*, p. 175, for *A. ornatulum* n. sp. N. S. Wales, p. 176, BREDDIN, Deutsche ent. Zeitschr. 1900.  
*Canthesancus pirata*, Celebes, BREDDIN, p. 175, t. c., n. sp.  
*Carthasis* n. g. near *Nabis*, p. 305, for *C. rufonotatus* n. sp., Panama, p. 306, pl. xix, fig. 4, CHAMPION, Biol. Centr.-Amer. Rhynch. ii.

- Castra* n. n. for *Cimbus* Burm. nec Lap., KIRKALDY, p. 242, Entomologist xxxiii.
- Coranus subapterus*, stridulating-organs, HANDLIRSCH, p. 129, cuts, Ann. Hofmus. Wien xv.
- Crociceus* n. n. for *Crocias* 1899, BREDDIN, p. 185, Deutsche ent. Zeitschr. 1900.
- Daraxa ambrosettii*, Buenos Aires, BERG, p. 188, Comun. Mus. Buenos Aires i, n. sp.
- Diplacodus* n. n. for *Diplodus* Am. nec. Raf., KIRKALDY, p. 242, Entomologist xxxiii.
- Ectinoderus ruppelli*, Halmahera, BREDDIN, p. 168, Abh. Senckenb. Ges. xxv, n. sp.
- Epidaurus compressispinus*, Borneo, BREDDIN, p. 172, t. c., n. sp.
- Epirodera vestita*, Java, HORVÁTH, p. 639, Semon Forschungsreisen v, n. sp.
- Ghilianella argentina*, Buenos Aires, BERG, p. 189, Comun. Mus. Buenos Aires i, n. sp.
- Gminatus nigroscutellatus*, N. S. Wales, BREDDIN, p. 179, Deutsche ent. Zeitschr. 1900, n. sp.
- Hammatocerus lunifer*, Buenos Aires, BERG, p. 187, Comun. Mus. Buenos Aires i, n. sp.
- Helonotus calcitrans*, characters, BREDDIN, p. 175, Abh. Senckenb. Ges. xxv.
- H. pseustes*, Key Is., BREDDIN, p. 182, Deutsche ent. Zeitschr. 1900, n. sp.
- Henricohahnia* n. g. *Harpactorini*, for *H. wahnschaffei* n. sp., Java, BREDDIN, p. 184, t. c.
- Isyndus brevispinus*, p. 180, *obliquispinus*, p. 181, Java, etc., BREDDIN, t. c., n. spp.
- Lyramma* n. g. *Ectrichodiini*, p. 44, for *L. vigil* n. sp., N. S. Wales, p. 45, BREDDIN, Ent. Nachr. xxvi.
- Mendola* n. g. *Ectrichodiini*, p. 177, for *M. puellula* n. sp., N. S. Wales, p. 178, BREDDIN, Deutsche ent. Zeitschr. 1900.
- Nabis lativentris*, habits, MARCHAL, p. 330, Bull. Soc. ent. France 1900.
- Oncoccephalus vosseleri*, p. 247, *fasciatus*, p. 249, Algeria, REUTER, Ofv. Finska Forh. xlii, n. spp.
- Opinus subater*, Halmahera, BREDDIN, p. 165, Abh. Senckenb. Ges. xxv, n. sp.
- Panthous theseus*, Borneo, Sumatra, BREDDIN, p. 174, t. c.; *P. minos*, Palawan, BREDDIN, p. 182, Deutsche ent. Zeitschr. 1900 : n. spp.
- Phorastes* n. n. for *Phorus* Stål nec Montf., KIRKALDY, p. 243, Entomologist xxxiii.
- Pirates cyaneonitens*, Halmahera, BREDDIN, p. 167, Abh. Senckenb. Ges. xxv, n. sp.
- Ploiariodes brevispina* var. n. *chobauti*, REUTER, p. 187, Bull. Soc. ent. France 1900.
- Pristhesanchus femoralis*, New Guinea, HORVÁTH, p. 640, Semon Forschungsreisen v, n. sp.
- Sastrapada brevicornis*, Borneo, BREDDIN, p. 174, Deutsche ent. Zeitschr. 1900, n. sp.
- Sinca complexa*, California, CAUDELL, p. 67, Canad. Ent. xxxii, n. sp.
- Sorglana* n. n. for *Macrophthalmus* Lap. nec Latr., KIRKALDY, p. 241, Entomologist xxxiii.
- Sphedanocoris varius*, N. S. Wales, BREDDIN, p. 42, Ent. Nachr. xxvi, n. sp.
- Sphedanolestes semicroceus*, New Guinea, BREDDIN, p. 45, t. c., n. sp.
- Staliastes* n. n. for *Opinus* Stål nec Lap., KIRKALDY, p. 241, Entomologist xxxiii.
- Sycanus pallens*, Balabac Island, Borneo, BREDDIN, p. 178, Deutsche ent. Zeitschr. 1900, n. sp.
- Tiarodes kukenthali*, Batchian, BREDDIN, p. 166, Abh. Senckenb. Ges. xxv, n. sp.

*Toxocampellus* n. g. near *Hagia* for *T. sanguineus* n. sp., Borneo, BREDDIN, p. 170, pl. ix, fig. 11, t. c.

*Velitra albipennis*, Uliasser, BREDDIN, p. 165, t. c., n. sp.

### ANTHOCORIDÆ.

*Anthocoris variipes*, pl. xix, fig. 23, p. 324, *variicornis*, *rufotinctus*, fig. 24, *dentipes*, fig. 25, p. 325, Centr. America, CHAMPION, Biol. Centr.-Amer. Rhynch. ii, n. spp.

*Asthenidea bifasciata*, Panama, CHAMPION, pl. xix, fig. 13, p. 318, t. c. n. sp.

*Cardiastethus tropicalis*, pl. xix, fig. 28, *rugicollis*, p. 331, Centr. America, CHAMPION, t. c. n. spp.

*Dolichomerium* n. n. for *Dolichomerus* Reut. nec Macq., KIRKALDY, p. 242, Entomologist xxxiii.

*Eulasicolpus* n. g. for *E. megalops* n. sp., Centr. America, pl. xix, figg. 6, 7, CHAMPION, p. 313, Biol. Centr.-Amer. Rhynch. ii.

*Lasiochiloides* n. g. for *L. denticulatus* n. sp., Guatemala, pl. xix, fig. 3, CHAMPION, p. 311, t. c.

*Lasiochilus nebulosus* Uhl. to *Asthenidea*, p. 317, figure, pl. xix, fig. 12, CHAMPION, t. c.

*L. punctipennis*, pl. xix, fig. 1, *microps*, *reuteri*, fig. 2, p. 308, *foveicollis*, p. 309, *sulcatus*, *divisus*, p. 310, Centr. America, CHAMPION, t. c. n. spp.

*Lasiocolpoides* n. g., p. 313, for *L. ciliatus* n. sp., Guatemala, p. 314, pl. xix, fig. 8, CHAMPION, t. c.

*Lasiocolpus sinuaticollis*, p. 312, figure, pl. xix, fig. 5, CHAMPION, t. c.

*L. minor*, Panama, CHAMPION, p. 312, t. c. n. sp.

*Macrotrachelia elongata*, pl. xix, fig. 14, p. 319, *albovittata*, fig. 15, *nitida*, fig. 16, *thripiformis*, fig. 17, p. 320, *opacipennis*, fig. 20, p. 321, Centr. America, CHAMPION, t. c. n. spp.

*Macrotracheliella* n. g. for *M. laevis* n. sp., Centr. America, pl. xix, figg. 21, 22, CHAMPION, p. 322, t. c.

*Melanocoris* n. g., p. 329, for *M. obovatus* n. sp., Guatemala, p. 330, pl. xix, fig. 27, CHAMPION, t. c.

*Paratriphleps* n. g., p. 328, for *P. laeviusculus* n. sp., Panama, pl. xix, fig. 26, p. 329, CHAMPION, t. c.

*Piezostethus albonotatus*, pl. xix, fig. 10, *bimaculatus*, fig. 11, Guatemala, CHAMPION, p. 316, t. c. n. spp.

*Plochiocoris* n. g., p. 314, for *Lasiochilus basalis* Uhler, figured, pl. xix, fig. 9, CHAMPION, t. c.

*Poronotus*, restored for *P. constrictus*, CHAMPION, p. 333, t. c.

*Scoloposcelis flavicornis*, pl. xix, fig. 32, CHAMPION, t. c.

*Solenonotus sulcifer*, figure, CHAMPION, p. 334, pl. xix, fig. 30, t. c.

*S. canaliculatus*, p. 334, *nigromarginatus*, p. 335, pl. xix, fig. 31, Centr. America, id. t. c. n. spp.

*Triphleps pumilio*, p. 327, *aterrimus*, p. 328, Centr. America, id. t. c. n. spp.

### CERATOCOMBIDÆ, CIMICIDÆ, SALDIDÆ.

*Acanthia variabilis* var. n. *mendica*, REUTER, p. 156, Bull. Soc. ent. France 1900.

*A. niveo-limbata*, Senegal, REUTER, p. 156, t. c.; *A. (Chiloxanthus) pygmæa*, Marocco, REUTER, p. 188, t. c. : n. spp.

*Ceratocombus panamensis*, Bugaba, CHAMPION, p. 336, Biol. Centr.-Amer. Rhynch. ii, n. sp.



- Hæmatosiphon* n. g. for *Acanthia inodora* Dug., figured, pl. xx, fig. 1, CHAMPION, p. 337, t. c.  
*Salda signoreti*, p. 339, pl. xx, fig. 2, *ventralis*, fig. 9, p. 342, characters, CHAMPION, t. c.  
*S. lævis*, pl. xx, fig. 3, p. 339, *sulcicollis*, fig. 4, *opacipennis*, fig. 5, p. 340, *comata*, fig. 6, *tropicalis*, fig. 7, p. 341, *quadrimaculata*, fig. 8, *abdominalis*, fig. 10, p. 343, Centr. America, CHAMPION, t. c. n. spp.

## CAPSIDÆ.

- Amblytylus vittiger*, Algeria, REUTER, p. 152, Ofv. Finska Forh. xlii, n. sp.  
*Anonychchia* n. g. near *Atomoscelis*, for *A. fokkeri* n. sp., Arabia, REUTER, p. 134, t. c.  
*Aphænohyphes* n. g. near *Campylomma*, p. 135, for *A. laticeps* n. sp., Algeria, p. 136, REUTER, t. c.  
*Atractotomus mali*=(*Reduvius malinellus* Pomm.), GIARD, p. 359, Bull. Soc. ent. France 1900.  
*A. brevicornis*, p. 140, *schmiedeknechti*, p. 141, Algeria, REUTER, Ofv. Finska Forh. xlii, n. spp.  
*Brachybasis* n. g. near *Megacelum*, for *B. desertorum* n. sp., Algeria, REUTER, p. 255, t. c.  
*Calocoris porphyropteris* var.  $\beta$ , REUTER, p. 158, t. c.  
*Camptobrochis punctulatus* var. n. *beckeri*, REUTER, p. 265, t. c.  
*Compsidolon* n. g. near *Psallus*, p. 147, for *C. elegantulum* n. sp., Syria, p. 148, REUTER, t. c. n. spp.  
*Globiceps subalpinus*, Styria, STROBL, p. 193, Mt. Ver. Steiermark xxxvi, n. sp.  
*Macrotylus geniculatus*, Algeria, p. 151, *montandoni*, Roumania, p. 152, REUTER, Ofv. Finska Forh. xlii, n. spp.  
*Megacoleus cunealis*, Algeria, REUTER, p. 153, t. c. n. sp.  
*Ochrodema* n. g. near *Tuponia*, p. 132, for *O. fusciloris* n. sp., Biskra, p. 133, REUTER, t. c.  
*Omphalonotus anomalus*, Egypt, REUTER, p. 155, t. c. n. sp.  
*Oncotylus bolivari*, Spain, REUTER, p. 261, t. c. n. sp.  
*Orthopidea* n. g. near *Plagiognathus*, p. 138, for *O. fusciceps* n. sp., Algeria, p. 139, REUTER, t. c.  
*Orthotylus marginalis* var. n. *oraniensis*, REUTER, p. 155, t. c.  
*O. viridipunctatus*, Roumania, id. p. 154, t. c.; *O. gracilis*, Algeria, REUTER, p. 263, t. c. : n. spp.  
*Pachytomella ænescens*, Algeria, REUTER, p. 157, t. c. n. sp.  
*Paramixia* n. g. near *Amixia*, for *P. suturalis* n. sp., Nile Valley, REUTER, t. c.  
*Phylidea* n. g. near *Phylus*, p. 149, for *P. femoralis* n. sp., S. France, p. 150, REUTER, t. c.  
*Phylus breviceps*, Syria, REUTER, p. 150, t. c. n. sp.  
*Phytocoris bleusei*, p. 159, *atomophorus*, p. 160, Algeria, REUTER, t. c.; *P. desertorum*, p. 251, *albohirsutus*, p. 252, Algeria, REUTER, t. c.; *P. retamæ*, Algeria, REUTER, p. 266, t. c. : n. spp.  
*Plagiognathus fulvipennis* var. n. *diversicornis*, REUTER, p. 140, t. c.  
*P. pallidus*, Algeria, REUTER, p. 257, t. c. n. sp.  
*Plagiotylus dispar*, Syria, REUTER, p. 156, t. c. n. sp.  
*Pronototropis longicornis*, Syria, REUTER, p. 259, t. c. n. sp.  
*Psallus pici*, *divergens*, p. 142, *pulchellus*, p. 143, Algeria, *fokkeri*, Iviça, p. 144, *erictorum*, Corfu, p. 145, *vicinus*, Mallorca, p. 146, REUTER, t. c. n. spp.  
*Solenoxypus reticulatus*, Wallachia, REUTER, p. 260, t. c. n. sp.  
*Sthenarus fuscicornis*, p. 136, *flavipes*, p. 137, Algeria, REUTER, t. c. n. spp.

*Trigonotylus pallidicornis*, Algeria, REUTER, p. 161, t. c. n. sp.

*Tuponia montandoni*, Roumania, REUTER, p. 131, t. c. n. sp.

### HYDROCORISÆ.

Testes of *Zaitha*; MONTGOMERY (921).

*Anisops aphrodite*, Congo, KIRKALDY, p. 435, Ann. Soc. ent. Belgique xliv, n. sp.

*Belostoma gestroi*, S. America, MONTANDON, p. 537, Ann. Mus. Genova xl, n. sp.

*Corisa* and *Sigara*; stridulating organs, HANDLIRSCH, pp. 134–141, pl. vii, Ann. Hofmus. Wien xv.

*Corixa lateralis* Leach = (*hieroglyphica* Duf.), KIRKALDY, p. 10, Entomologist xxxiii.

*Enithares indica* = (*Not. abbreviata* Kirby), *E. brasiliensis* = (*Bothronotus grandis* Fieb.), KIRKALDY, p. 10, t. c.

*Laccotrephes papuus*, New Guinea, MONTANDON, p. 539, Ann. Mus. Genova xl, n. sp.

*Limnocoris volxemi*, characters, MONTANDON, p. 421, Termes. Fuzetek xxiii.

*L. horvathi*, Peru, id. p. 420, t. c. n. sp.

*Macrocoris parviceps*, E. Africa, MONTANDON, p. 422, t. c. n. sp.

*Naucoris cimicoides*, stridulation, HANDLIRSCH (555).

*Notonecta triangularis* Guer. = (*simplex* Kirby 1891) and *templetonii* Kirby referred to *Enithares*, *N. indica* L. = (*americana* Fab. and *unifasciata* Guer.), KIRKALDY, p. 10, Entomologist xxxiii.

*Nychia marshalli* var. n. *sappho*, KIRKALDY, p. 809, Ann. Mus. Genova xl.

*Palæoheteroptera* and *Palæonepidoideus* n. genn., vide Palæoentomology p.

*Ranatra linearis*, oviposition, ENOCK, p. xii, P. ent. Soc. London 1900, and p. 161, Ent. Mag. xxxvi; *R. linearis*, defensive attitude, PLATEAU (1044).

### HEMIPTERA-HOMOPTERA.

[The following memoirs relate to *Hemiptera-Homoptera*, viz. :—ANNANDALE (32), BAKER (55, 56, 57), BALL (58, 59, 60), BREDDIN (172), DISTANT (328, 330), FABRE (385), FOWLER (511), GREEN (526), GRUNER (542), HANDLIRSCH (554, 555), HANSEN (562), HORVÁTH (605), KIRBY (725), KIRKALDY (729, 730, 733), MATSUMURA (866, 868), MELICHAR (891, 892, 893), OSBORN (967, 969, 970, 971), PAZLAVSKY (981), STROBL (1290), THEN (1313). Also *Psyllidæ* p. 331, *Aphidæ* p. 331, *Aleurodideæ* p. 332, and *Coccidæ* p. 332.]

Antennæ etc. ; translation of HANSEN'S 1890 paper, HANSEN (562).

### CICADIDÆ.

Malay method of attracting *Dundubia*, ANNANDALE, P. Zool. Soc. London 1900, pp. 859–862.

*Cicada sinclairii*, attacked by *Cordyceps*, BENHAM (96).

*Baturia exhausta*, characters, BREDDIN, p. 181, Abh. Senckenb. Ges. xxv, n. sp.

*Cicada septendecim*, brood xx in Ohio in 1900, WEBSTER, p. 638, Ent. News Philad. xi.

*C. daiaca*, Borneo, BREDDIN, p. 180, Abh. Senckenb. Ges. xxv, n. sp.

*Cosmopsaltria alfura*, Celebes, BREDDIN, p. 177, pl. ix, fig. 12, t. c. n. sp.

- Dorachosa explicata*, figured, pl. vi, fig. 14, DISTANT, Biol. Centr.-Amer. Rhynch. Homopt. i.  
*Fidicina oleacea* referred to *Cicada* and figured, p. 42, pl. vi, fig. 17, *F. amæna*, fig. 15, *cachla*, fig. 16, figured, DISTANT, Biol. Centr.-Amer. Rhynch. Homopt. i.  
*Pomponia diffusa*, Borneo, BREDDIN, p. 179, Abh. Senckenb. Ges. xxv, n. sp.  
*Talainga chinensis*, Fokien, DISTANT, p. 209, Entomologist xxxiii, n. sp.

### FULGORIDÆ (s. l. incl. FLATIDÆ, etc.).

- The *Fulgoridæ* of Japan, MATSUMURA, Ent. Nachr. xxvi, pp. 205–213 and 257–269.  
 The prolonged head used for jumping, ANNANDALE, p. 866, P. Zool. Soc. London 1900.  
*Acanalonia virescens* figured, pl. vii, fig. 7, p. 49, FOWLER, Biol. Centr.-Amer. Rhynch. i.  
*A. dubia*, p. 46, pl. vii, fig. 1, *panimæ*, fig. 2, *calata*, fig. 3, p. 47, *pinniformis*, fig. 4, *affinis*, fig. 5, *gaumeri*, fig. 6, p. 48, *delicatula*, fig. 8, *concinnulla*, fig. 9, p. 49, Centr. America, FOWLER, t. c. n. spp.  
*Apateson* n. g. *Ricaniinae*, for *A. albomaculatum*, n. sp., Centr. America, pl. viii, fig. 15, FOWLER, p. 70, t. c.  
*Armacia consobrina*, characters, BREDDIN, p. 196, Abh. Senckenb. Ges. xxv.  
*Benna olivacea*, Japan, MATSUMURA, p. 213, Ent. Nachr. xxvi, n. sp.  
*Bidis aristella*, Christmas Is., KIRBY, p. 136, pl. xv, figg. 12, 13, Monogr. Christmas Island, n. sp.  
*Bladina magnifrons*, figured, pl. viii, fig. 14, FOWLER, p. 69, Biol. Centr.-Amer. Rhynch. Homopt. i.  
*Chlorionidea testacea*, Japan, MATSUMURA, p. 257, Ent. Nachr. xxvi, n. sp.  
*Cixiopsis* n. g. *Dictyopharida*, p. 207, for *C. punctatus*, n. sp., Japan, p. 208, MATSUMURA, t. c.  
*Cladypha bugabensis*, Panama, pl. vi, fig. 12, *rufivena*, Mexico, fig. 11, p. 44, FOWLER, Biol. Centr.-Amer. Rhynch. Homopt. i, n. spp.  
*Colgar* n. n. for *Atella* Stål nec Doubl., KIRKALDY, p. 242, Entomologist xxxiii.  
*Conicoda* n. g. *Delphacides*, p. 258, for *C. graminea*, p. 259, *nigra*, p. 260, n. spp., Japan, MATSUMURA, Ent. Nachr. xxvi.  
*Dascalina nietoi*, Mexico, FOWLER, p. 59, pl. vii, fig. 26, Biol. Centr.-Amer. Rhynch. Homopt. i, n. sp.  
*Delphacinus alpinus*, Styria, STROBL, p. 203, Mt. Ver. Steiermark xxxvi, n. sp.  
*Derbe westwoodi*, Centr. America, FOWLER, p. 71, pl. viii, fig. 16, Biol. Centr.-Amer. Homopt. i, n. sp.  
*Dicranotropis alborittata*, Japan, MATSUMURA, p. 269, Ent. Nachr. xxvi, n. sp.  
*Dictyophara pallida*, note, p. 43, pl. v, figg. 1–6, Ind. Mus. Notes v.  
*D. orbiculata*, Mexico, DISTANT, p. 41, pl. vi, fig. 9, Biol. Centr.-Amer. Rhynch. Homopt. i, n. sp.  
*Dictyopharoides* n. g. for *D. tenuirostris*, n. sp., Mexico, pl. vi, fig. 10, FOWLER, p. 44, Biol. Centr.-Amer. Rhynch. Homopt. i.  
*Epeurya* n. g. near *Eurya*, for *E. nawai*, n. sp., Japan, MATSUMURA, p. 261, Ent. Nachr. xxvi.  
*Eurybrachys westwoodi* Kirb., referred to *Messena*, KIRKALDY, p. 294, Entomologist xxxiii.  
*Flatide* and subfamilies discussed, FOWLER, p. 45, Biol. Centr.-Amer. Rhynch. Homopt. i.

- Flata conspersa*, note, p. 54, figure, pl. vii, fig. 17, FOWLER, t. c.  
*F. championi*, p. 51, pl. vii, fig. 10, *rotundior*, fig. 11, *punctata*, *rufocinctata*, fig. 12, p. 52, *monticola*, fig. 13, *corrupta*, fig. 14, *regularis*, fig. 15, *perpusilla*, fig. 16, p. 53, Centr. America, FOWLER, t. c. n. spp.  
*Flatoides humeralis*, pl. viii, fig. 1, variation, p. 60, *obliquus* Walk. (as *Elidiptera*), fig. 6, p. 64, FOWLER, t. c.  
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*Geisha* n. g. for *Paciloptera distinctissima* Walk., KIRKALDY, p. 296, Entomologist xxxiii.  
*Gætulia planipennis*, figure, variation, FOWLER, p. 68, pl. viii, fig. 13, Biol. Centr.-Amer. Rhynch. Homopt. ii.  
*Hindola* n. n. for *Carystus* Stål, nec Hubn., KIRKALDY, p. 243, Entomologist xxxiii.  
*Issus? andrewsi*, Christmas Is., KIRBY, p. 138, pl. xv, fig. 15, Monogr. Christmas Island, n. sp.  
*Jamaicastes* n. n. for *Domitia* Stål nec Th., KIRKALDY, p. 243, Entomologist xxxiii.  
*Kalidasa* n. n. for *Phoronis* Stål nec Wright, KIRKALDY, p. 243, t. c.  
*Liburnia nipponica*, *devastans*, p. 262, *minoensis*, p. 263, *giffuensis*, p. 264, *yezoana*, *nagaragawana*, p. 265, *akashiensis*, *maikoensis*, p. 266, *tyreiformis*, p. 267, *albifascia*, p. 268, Japan, MATSUMURA, Ent. Nachr. xxvi, n. spp.  
*Melicharia* n. g. *Pækilopterinae*, for *Paciloptera quadrata* Kirby, KIRKALDY, p. 294, Entomologist xxxiii.  
*Mimophantia* n. g. *Flatides*, for *M. maritima*, n. sp., Japan, MATSUMURA, Ent. Nachr. xxvi.  
*Mindura hemerobii* referred to *Sassula*, KIRKALDY, p. 10, Entomologist xxxiii.  
*Mysidia costata*, pl. viii, fig. 18, *nebulosa*, fig. 19, p. 73, FOWLER, Biol. Centr.-Amer.  
*M. acidalioides*, pl. viii, fig. 17, p. 72, *parviceps*, p. 20, *maculicosta*, fig. 21, *elator*, fig. 22, p. 73, *delicatissima*, fig. 23, *M.? spreta*, p. 74, Centr. America, FOWLER, t. c. : n. spp.  
*Nephesa spumans*, Celebes, BREDDIN, p. 199, Abh. Senckenb. Ges. xxv, n. sp.  
*Nogodina subguttata* var. ?, BREDDIN, p. 197, t. c. ; *N. affinis*, fig. 8, *hyalina*, fig. 9, pl. xv, p. 134, KIRBY, Monogr. Christmas Island.  
*N. subviridis*, Christmas Is., id. t. c., p. 135, pl. xv, figg. 10, 11 ; *N. umbra*, Celebes, BREDDIN, p. 197, Abh. Senckenb. Ges. xxv : n. spp.  
*Oliarus flaviceps*, Japan, MATSUMURA, p. 208, Ent. Nachr. xxvi, n. sp.  
*Ormenis pulverulenta*, figured, pl. vii, fig. 18, FOWLER, Biol. Centr.-Amer. Rhynch. Homopt. i.  
*O. nigrolimbata*, pl. vii, fig. 19, p. 55, *erminia*, fig. 20, *dolabrata*, fig. 21, p. 56, *squamulosa*, fig. 22, *albescens*, fig. 23, *griseoalba*, fig. 24, p. 57, *inferior*, fig. 25, p. 58, Centr. America, FOWLER, t. c. n. spp.  
*Otiocorus sapporoensis*, Japan, MATSUMURA, p. 209, Ent. Nachr. xxvi ; *O. montanus*, pl. viii, fig. 24, p. 74, *interruptus*, *venustus*, fig. 25, *griseus*, fig. 26, p. 75, *gracilior*, fig. 27, *breviceps*, pl. ix, fig. 1, *O.? rubescens*, fig. 2, p. 76, Centr. America, FOWLER, t. c. n. spp.  
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*Pochazia australis*, young, natural history, FROGGATT, p. 650, pl. fig. 6, Agric. Gaz. N. S. W. xi.  
*Ricania trifasciata*, Japan, MATSUMURA, p. 211, Ent. Nachr. xxvi ; *R. depressicollis*, Borneo, p. 194, *amethystinula*, Celebes, p. 195, BREDDIN, Abh. Senckenb. Ges. xxv ; *R. flavifrontalis*, Christmas Is., KIRBY,



- p. 131, pl. xv, fig. 5, Monogr. Christmas Island ; *R. bugabensis*, pl. viii, fig. 7, *feralis*, fig. 8, Panama, FOWLER, p. 65, Biol. Centr.-Amer. Rhynch. Homopt. i : n. spp.
- Sassula pictifrons*, figures, variation, FOWLER, p. 67, pl. viii, figg. 9-11, t. c. *S. costalis*, Nicaragua, FOWLER, p. 68, pl. viii, fig. 12, t. c. n. sp.
- Scamandra medea*, Borneo, BREDDIN, p. 193, Abh. Senckenb. Ges. xxv, n. sp.
- Scarpanta tennentina* = (*latipennis* Kirby), KIRKALDY, p. 295, Entomologist xxxiii.
- Stenocranus styriacus*, Steinbruck, STROBL, p. 204, Mt. Ver. Steiermark xxxvi, n. sp.
- Tettigometra bipunctata*, Japan, MATSUMURA, p. 210, Ent. Nachr. xxvi, n. sp.
- Tonga* n. n. for *Cyrene* Westw. nec Heck., KIRKALDY, p. 242, Entomologist xxxiii.
- Varcia flavicostalis*, pl. xv, fig. 7, p. 133, KIRBY, Monogr. Christmas Island.
- Zoraida* n. n. for *Thracia* Westw. nec Blainv., KIRKALDY, p. 242, Entomologist xxxiii.

## MEMBRACIDÆ.

- Relations of species with ants in Ceylon ; excretory tube of larva, GREEN, p. 185, Ent. Mag. xxxvi, cut.
- Adippe maculata*, note on, DISTANT, p. 694, Tr. ent. Soc. London 1900.
- A. hæretica*, Centr. America, (= *maculata* Fowl. nec Dist.), DISTANT, p. 694, t. c. n. sp.
- Hyphinoe proclivis*, *thoracata*, Costa Rica, DISTANT, p. 695, t. c. n. spp.
- Gargaropsis* Fowler is the *Centrotine* genus *Macropsis*, BALL, pp. 128-130, Psyche ix.
- Macropsis* = (*Gargaropsis* Fowl.) ; BAKER's recent species discussed, *M. leta* var. n. *pæta*, BALL, pp. 128-130, Psyche ix.

## CERCOPIDÆ.

- The production of foam by *Aphrophora*, FABRE (385), GRUNER (542).
- Aphrophora alpina*, Tyrol, MELICHAR, p. 58, Wien. ent. Zeit. xix, n. sp.
- Cercopis semicincta* Walk. 1870, referred to *Cosmoscarta* and renamed *C. cyane*, BREDDIN, p. 183, pl. ix, figg. 13, 14, Abh. Senckenb. Ges. xxv.
- Clastoptera* ; synonymy of some species and varr., *lineaticollis* Stål = (*delicata* Uhl.), BAKER, pp. 463, 464, Ent. News Philad. xi.
- C. bimaculata*, Mexico, BAKER, p. 464, t. c. n. sp.
- Clovioa eximia*, Christmas Is., KIRBY, p. 137, pl. xv, fig. 14, Monogr. Christmas Island, n. sp.
- Cosmoscarta* ; observations and synonymical notes, DISTANT, pp. 681-683, Tr. ent. Soc. London 1900 ; *C. laticincta* Walk., p. 182, *C. inexacta* Walk. (as *Cercopis*), p. 184, pl. ix, fig. 15, characters, BREDDIN, Abh. Senckenb. Ges. xxv.
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- Phymatostetha stali* = (*Cosmoscarta sikkimensis* Atk.); *P. punctifascia* (Walk.) referred to *Aphrophorinæ*, DISTANT, p. 686, Tr. ent. Soc. London 1900.
- P. nangla*, pl. ix, fig. 9, p. 683, India, *flavopicta*, Philippines, *sema*, fig. 10, p. 684, *rengma*, fig. 11, India, *karenia*, fig. 12, Burma, p. 685, *bracteata*, Borneo, p. 686, DISTANT, t. c. n. spp.
- Sphenorhina biolleyi*, *quota*, Costa Rica, DISTANT, p. 693, t. c. n. spp.

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- Agallia hispanica*, Ciudad Real, HORVÁTH, p. 128, Termes. Fuzetek xxiii ; *A. reticulata*, *clitellaria*, Hayti, p. 127, *barretti*, Mexico, p. 128, BALL, Psyche ix : n. spp.
- Athysanus artemisiæ*, Hungary, MATSUMURA, p. 233, SB. Ges. naturf. Berlin ; *A. potanini*, p. 38, *dubitans*, *detersus*, p. 39, *debilis*, p. 40, Transbaikal and Mongolia, MELICHAR, Wien. ent. Zeit xix : n. spp.
- Balelutha* n. n. for *Gnathodus* Fieb., nec Pand., KIRKALDY, p. 243, Entomologist xxxiii.
- Chlorotettix tunicata*, *nudata*, p. 340, *stolata*, p. 341, N. America, BALL, Canad. Ent. xxxii, n. spp.
- Cicadula pоторia*, Iowa, BALL, p. 346, t. c. n. sp.
- Darrhula* n. n. for *Urophora* Westw. nec. Desv., KIRKALDY, p. 242, Entomologist xxxiii.
- Deltocephalus*, monograph of Austrian, with details of male characters, THEN, Mt. Ver. Steiermark xxxii, pp. 118-169, 2 pls.
- Deltocephalus incertus*, *hilaris*, Transbaikal, MELICHAR, p. 42, Wien. ent. Zeit. xix ; *D. apicatus*, N. America, OSBORN, p. 285, Canad. Ent. xxxii ; *D. grammicus*, Colorado, BALL, p. 204, t. c. ; *D. caperatus*, N. America, *comatus*, Mexico, p. 343, *sonorus*, N. America, p. 344, *elimatus*, Mexico, *gnarus*, N. America, p. 345, BALL, t. c. : n. spp.
- Dicraneura quinquepunctata*, Irkutsk, MELICHAR, p. 34, Wien. ent. Zeit. xix, n. sp.
- Edwardsiastes* n. n. for *Glyptocephalus* Edw. nec Gotts., KIRKALDY, p. 243, Entomologist xxxiii.
- Euacanthus sibiricus*, Irkutsk, MELICHAR, p. 43, Wien. ent. Zeit. xix, n. sp.
- Eutettix magnus*, Arkansas, OSBORN, p. 395, Ent. News Philad. xi ; *E. insana*, p. 203, *stricta*, p. 204, N. America, BALL, Canad. Ent. xxxii : n. spp.
- Flosshilda* n. n. for *Autonoë* Stål nec Bruz., KIRKALDY, p. 243, Entomologist xxxiii.
- Gypona kirbyi* n. n. for *striata* Kirby, *G. walkeri* n. n. for *prasina* Walk., KIRKALDY, p. 294, Entomologist xxxiii.
- Hilda* n. n. for *Isthmia* Walk. nec Gray, KIRKALDY, p. 243, t. c.
- Idiocerus*; notes on synonymy and characters of *I. duzei* etc., Canad. Ent. xxxii, pp. 207, 208.
- I. ? punctatus*, Christmas Is., KIRBY, p. 138, pl. xv, fig. 16, Monogr. Christmas Island : n. sp.
- Krisna* n. n. for *Siva* Spin. nec Hodgs., KIRKALDY, p. 243, Entomologist xxxiii.

- Lonatura nebulosa*, p. 341, *noctivaga*, p. 342, N. America, BALL, Canad. Ent. xxxii, n. spp.
- Macropsis idioceroides*, New Mexico, p. 55, *atra*, California, *smithii*, *sordidus*, p. 56, S. America, *californicus*, *magnus*, p. 57, *rufoscutellatus*, *alabamensis*, p. 58, N. America, *stramineus*, Brazil, p. 59, BAKER, Psyche ix, n. spp.
- Nirvana* n. g. *Jassinæ*, for *N. pseudommatos* n. sp., Ceylon, KIRKALDY, p. 293, Entomologist xxxiii.
- Paramesus rotundiceps* ♀, MELICHAR, p. 238, Wien. ent. Zeit. xix.
- P. furcatus*, N. America, OSBORN, p. 285, Canad. Ent. xxxii, n. sp.
- Pediopsis latestriata*, Admont, STROBL, p. 209, Mt. Ver. Steiermark xxxvi, n. sp.
- Phlepsius josea*, Colorado, BALL, p. 347, Canad. Ent. xxxii; *P. lascivius*, *turpiculus*, p. 200, *graphicus*, p. 201, *cumulatus*, with var. *arctostaphyle*, p. 202, *albidus*, p. 203, N. America, BALL, t. c. : n. spp.
- Platymetopus hyalinus*, N. America, OSBORN, p. 501, Ent. News Philad. xi; *P. ornatus*, *oregonensis*, p. 49, *latus*, N. America, *tenuifrons*, S. America, p. 50, BAKER, Canad. Ent. xxxii : n. spp.
- Rhytistylus pellucidus* Fieb., description and figg., MELICHAR, pp. 268–270, Wien. ent. Zeit. xix.
- Scaphoideus*, revision of the genus, OSBORN, J. Cincinnati Soc. xix, pp. 187–209, pls. ix, x.
- S. fasciatus*, Haiti and Mexico, p. 190, *mexicanus*, Mexico, p. 197, *productus*, p. 200, *carinatus*, p. 201, *melanotus*, p. 206, *obtusus*, p. 207, *cinerosus*, p. 208, N. America, OSBORN, t. c. n. spp.
- Tettigonia*; the following figured, *rufofasciata*, pl. xvii, fig. 1, *scutellata*, fig. 3, *costaricensis*, fig. 6, *pulchella*, fig. 8, with var. *proxima*, fig. 9, *flavoguttata*, fig. 10, *areolata*, fig. 11, *laudata*, fig. 13, *sexguttata*, fig. 14, *jucunda*, fig. 16, *sanguinolenta*, fig. 17, *guttata*, fig. 18, *vulnerata*, fig. 21, *venusta*, fig. 25, *multicolor*, fig. 26, *atropunctata*, fig. 27, *lutea*, pl. xviii, fig. 1, *lucasi*, fig. 3, *mollipes*, fig. 15, *quadrivittata*, fig. 20, *cæruleovittata* var. n. *delineata*, fig. 23, p. 277, *urbana*, fig. 25, *limbaticollis*, fig. 27, *occatoria*, fig. 29, *sexlineata*, fig. 30, *rufimargo*, pl. xix, fig. 11, with var. n. *proprior*, fig. 12, p. 284, *variegata*, fig. 27, FOWLER, Biol. Centr.-Amer. Rhynch. Homopt. ii.
- T. kalidasa*, Ceylon, KIRKALDY, p. 294, Entomologist xxxiii; *T. bilineata*, pl. xvi, fig. 27, *teniata*, fig. 28, *distinguenda*, fig. 29, *ostrina*, fig. 30, p. 257, *detracta*, p. xvii, fig. 2, p. 258, *trivirgata*, fig. 4, *purpurascens*, fig. 5, p. 259, *rubricollis*, fig. 7, p. 260, *collata*, fig. 12, p. 261, *sociata*, fig. 15, p. 262, *coccinea*, fig. 19, *bilimeki*, fig. 20, p. 203, *recta*, fig. 22, p. 264, *æqua*, fig. 23, *albiceps*, fig. 24, p. 265, *reservata*, pl. xviii, fig. 2, p. 267, *completa*, fig. 4, p. 268, *delicata*, fig. 5, *fuscodorsata*, fig. 6, *verecunda*, fig. 7, p. 269, *induta*, fig. 8, *clepsydra*, fig. 9, p. 270, *flavivitta*, fig. 10, *compta*, fig. 11, *tunicata*, fig. 12, p. 271, *sororia*, fig. 13, *civilis*, fig. 14, p. 272, *notaticeps*, fig. 16, p. 273, *diducta*, fig. 17, *innervis*, p. 274, *prolixa*, fig. 18, *virgaticeps*, fig. 19, p. 275, *reducta*, fig. 21, *idonea*, fig. 22, p. 276, *composita*, fig. 24, p. 277, *flaccida*, *obtusior*, fig. 26, p. 278, *anceps*, fig. 28, p. 279, *carissima*, pl. xix, fig. 1, p. 280, *anita*, fig. 2, *lativittata*, fig. 3, *salutaris*, fig. 4, p. 281, *infulata*, fig. 5, *dorsisignata*, fig. 6, *rubescens*, fig. 7, p. 282, *aurolineata*, fig. 8, *lemniscata*, fig. 9, p. 283, *luculenta*, fig. 10, p. 284, *pectoralis*, fig. 13, *miniaticeps*, fig. 14, *spectanda*, fig. 15, p. 285, *rufopicipata*, fig. 16, *orbata*, fig. 17, p. 286, *pileata*, fig. 18, *concinna*, fig. 19, *teres*, fig. 20, p. 287, *robustula*, fig. 21, *satelles*, fig. 22, *mollicula*, fig. 23, p. 288, *molicella*, fig. 24, *tenera*, p. 289, *fuscolinella*, pl. xix, fig. 25, *psittacella*, fig. 26, p. 290, *nasuta*, fig. 28, *angustula*, fig. 29, p. 291, with var. *immaculata*, fig. 30, p. 292, Central America, FOWLER, t. c. n. spp.
- Thamnotettix kuhlgutzi*, Berlin, MATSUMURA, p. 232, SB. Ges. naturf.

Berlin 1900; *T. elegans, ornatus*, E. Siberia, MELICHAR, p. 36, Wien. ent. Zeit. xix; *T. chiragica, osborni*, p. 337, *heidemanni*, p. 338, *cockerelli*, N. America, *peregrina*, Mexico, p. 339, BALL, Canad. Ent. xxxii: n. spp.

*Thaumtopsalltria* n. n. for *Acrilla* Stål nec Adams, KIRKALDY, p. 242, Entomologist xxxiii.

*Zyza* n. n. for *Germania* Lap. nec Desv., KIRKALDY, p. 243, Entomologist xxxiii.

## PSYLLIDÆ.

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Australian *Psyllidæ*, natural history etc., FROGGATT (461).

*Aphalara carinata*, Australia, FROGGATT, p. 279, P. Linn. Soc. N. S. Wales xxv, n. sp.

*Cardiaspis plicatuloides*, Australia, FROGGATT, t. c. n. sp.

*Cometopsylla* n. g. for *C. rufa* n. sp., Australia, FROGGATT, p. 286, t. c.

*Dasyopsylla* n. g. for *D. brunnea* n. sp., Australia, FROGGATT, p. 292, t. c.

*Lasiopsylla* n. g. for *L. rotundipennis*, p. 261, *bullata*, p. 264, n. spp., Australia, FROGGATT, t. c.

*Psylla obsoleta*, Bombay, BUCKTON, p. 35, pl. v, figg. 10-15, Ind. Mus. Notes v, n. sp.

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*Spondyliaspis mannifera*, Australia, FROGGATT, p. 291, t. c. n. sp.

*Thea formicosa*, p. 295, *opaca*, p. 297, *leai*, p. 298, Australia, FROGGATT, t. c. n. spp.

## APHIDÆ.

[Cf. CHOLODKOVSKY (247, 248), DOANE (334), DOERSTLING (339), GILLANDERS (509), JOHNSON (667), MORDWILKO (924), NÜSSLIN (947, 948, 949), PERGANDE (986, 987), RITTER & RÜBSAAMEN (1120), SCHOUTEDEN (1158), SMITH (1243), THEOBALD (1315), THIELE (1320), ZEHNTNER (1430).]

Biology and Morphology of *Aphidæ*, MORDWILKO (924).

Life-cycles of *Chermes* and influence of external conditions, CHOLODKOVSKY (247).

Male structures of *Chermes*, CHOLODKOVSKY (248).

Catalogue of *Aphidæ* of Belgium, SCHOUTEDEN, pp. 113-139, Ann. Soc. ent. Belgique xlv.

Natural history of *Phylloxera*, RITTER & RÜBSAAMEN (1120).

Natural history of *Mindarus*, oviposition and hatching, NÜSSLIN (947, 948).

Habits of *Aphidæ* living on trees in Britain, GILLANDERS (509).

*Aphis mali*, natural history, SMITH (1243).

*A. cymbalariae*, p. 123, *violæ*, p. 127, Belgium, SCHOUTEDEN, Ann. Soc. ent. Belgique xlv, n. spp.

*Ceratovacuna lanigera*, natural history, ZEHNTNER (1430).

*Cladobius* Koch = (*Melanoxanthus* and *Pterocomma* Buckt.), PERGANDE, p. 517, P. ent. Soc. Washington ii.

*Melanoxanthus flocculosus*, forms described, SCHOUTEDEN, pp. 128-130, Ann. Soc. ent. Belgique xlv.

*Mindarus abietinus*, biology, life-cycles, NÜSSLIN (947, 948).



- Myzus heraclei* ♂, ovip. ♀, SCHOUTEDEN, p. 119, Ann. Soc. ent. Belgique xliv.
- Nectarophora caudata*, p. 513, *insularis*, *epilobii*, p. 515, Alaska, PERGANDE, P. Ac. Washington ii; *N. destructor*, N. America, JOHNSON, p. 56, cuts, Canad. Ent. xxxii : n. spp.
- Pemphigus poschingeri*, biology, life-cycles, NÜSSLIN (949).
- P. betæ*, N. America, DOANE, p. 391, Ent. News Philad. xi, n. sp.
- Phorodon humilis* life-history in Kent, THEOBALD (1315); *P. inulæ* ♂, ovip. ♀, SCHOUTEDEN, p. 118, Ann. Soc. ent. Belgique xlv.
- Phylloxera vastatrix*, RITTER & RUBSAAMEN (1120).
- Polyocellaria* n. g., IMHOF (636).
- Rhopalosiphum violæ*, N. America, PERGANDE, p. 29, Canad. Ent. xxxii, n. sp.
- Sipha schoutedeni*, Belgium, DEL GUERCIO, p. 134, Ann. Soc. ent. Belgique xlv, n. sp.

## ALEURODIDÆ.

[Cf. BUCKTON (193), QUAINTANCE (1065), ZEHNTNER (1429).]

Monograph of N. American *Aleurodidae*, QUAINTANCE, Bull. U. S. Dep. Agric. Ent. tech. viii.

*Aleurodes mori* var. ? in Arizona, COCKERELL, p. 366, Sci. Gossip vi; *A. longicornis* and *lactea*, metamorphosis, habits, injuries, ZEHNTNER (1429).

*A. nubilans*, India, BUCKTON, p. 36, pl. v, figg. 7-9, Ind. Mus. Notes v; *A. longicornis*, Java, ZEHNTNER, Arch. Java-Suikerindustrie, 1897, p. 381, and Overzicht van de Ziekten etc. 2<sup>e</sup> Deel, 1897, p. 33; *A. abnormis*, p. 17, pl. i, figg. 1-3, *acaciæ*, p. 19, figg. 4-7, *altissima*, p. 20, figg. 8-12, *coronata*, p. 22, pl. ii, figg. 13-15, *fitchi*, p. 24, figg. 16, 19, *floridensis*, p. 26, figg. 20-22, *inconspicua*, p. 28, figg. 23-25, *nephrolepidis*, p. 29, figg. 26-30, *pergandei*, p. 31, figg. 34-37, 72, *perseeæ*, p. 32, figg. 38-40, *plumosa*, p. 33, figg. 31-33, *quercus-aquaticæ*, p. 35, figg. 41-44, *spiræoides*, p. 36, figg. 41-49, *tracheifer*, p. 38, figg. 50-52, *variabilis*, p. 39, figg. 53-55, *vittata*, p. 42, figg. 56-58, N. America, QUAINTANCE, Bull. Dep. Agric. Ent. tech. viii : n. spp.

*Aleurodicus minima*, N. America, QUAINTANCE, p. 47, pl. vi, figg. 65-67, t. c. n. sp.

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[Cf. ASHMEAD (37), BOGUE (132), BRICK (184), BUFFA (194), COCKERELL (280-286), EHRHORN (367), FRANK & KRÜGER (444), FROGGATT (462), GREEN (521-525), GUERCIO (543), HEMPEL (576-579), HOWARD (616), HUNTER (628), KING (714, 715, 716), KOCHS (740), KRÜGER & KRÜGER (785), LEONARDI (813, 814), LOCHHEAD (824), MARLATT (856, 857), MEERWARTH (883), NEWSTEAD (938, 939, 940), REH (1082-1087), SJÖSTEDT (1224), TINSLEY & COLLEGE (1322).]

Periodicity, inequality in numbers of the two sexes, REH (1083).

The locomotion of young *Coccidæ*, REH (1087).

Mode of mounting for microscope, GREEN (523).

Experiments as to power of resistance of *Diaspinæ*, REH (1082).

*Coccidæ* injurious in Britain, NEWSTEAD (939).

Natural history of *Coccidæ* injurious to fruit and vines in Germany, FRANK & KRÜGER (444).

The effects of *Coccidæ* on vegetation, KOCHS (740).

The injuries of *Coccidæ* to fruit in Germany, KRÜGER & KRÜGER (785).

- The known species and the literature of Indian *Coccidæ*, GREEN, Ind. Mus. Notes v, p. 1.
- Coccidæ* in Massachusetts, plants etc., KING, pp. 116–118, Psyche ix.
- Coccidæ* of the ivy in N. America, KING, pp. 214, 215, Canad. Ent. xxxii.
- The *Coccidæ* of Brazil, HEMPEL (576).
- The Encyrtid destroyers of *Coccidæ*; names of the scales and parasites, ASHMEAD (37).
- Aclerda deberlesii*, Italy, BUFFA (194), n. sp.
- Anoplaspis* n. g. type *Aspidiotus bambusarum* Cock., LEONARDI, p. 344, Riv. Patol. Veg. viii.
- Anoplaspis* and *Froggattiella*, queried as one, COCKERELL, p. 72, Psyche ix.
- Antonina crawi*, Japan, COCKERELL, p. 70, t. c. n. sp.
- Aonidia*, composition of genus, LEONARDI, pp. 204, 205, Riv. Patol. Veg. viii; *A.* monograph, with *Cryptoaonidia* subg. n. for *Aspidiotus hackee* Mask., LEONARDI, pp. 320–337, t. c.
- A. ebeni* (Green), p. 329, *messuæ* (Green), p. 331, Ceylon, LEONARDI, t. c.; *A. spatulata*, p. 73, pl. c, figg. 10–13, *crenulata*, pl. d, figg. 14, 15, *mesuæ*, figg. 16–18, p. 74, *perplexa*, pl. e, figg. 19, 20, *planchionioides*, figg. 21–23, p. 252, Ceylon, GREEN, J. Bombay Soc. xiii : n. spp.
- Apiococcus* n. g. *Coccineæ*, p. 401, for *A. gregarius*, p. 402, *singularis*, p. 403, *asperatus*, p. 404, *globosus*, p. 405, n. spp., Brazil, HEMPEL, Revist. Mus. Paulista iv.
- Aspidiotus* and allies, completion of monograph of, LEONARDI (814); *A. diffinis*, habitat, synonymy etc., MARLATT, Ent. News Philad. xi, pp. 425–427; *A. ostreæformis*, *pyri*, characters, synonymy, REH, p. 497, Zool. Anz. xxiii; *A. ostreæformis*, characters and synonymy, REH (1086); *A. trilobitiformis*=(*darutyi* Charm.), GREEN, p. 67, J. Bombay Soc. xiii; *A. theæ* var. n. *rhododendri*, GREEN, p. 67, pl. A, figg. 2, 3, J. Bombay Soc. xiii; *A. dictyospermi arecæ*, p. 68, pl. A, fig. 4, *A. orientalis* Newst.=(*osbeckiæ* Gr.), *A. transparens*, *destructor*, synonymy and characters, pp. 69, 70, GREEN, J. Bombay Soc. xiii; *A. dictyospermi* var. *arecæ*, note, ♀, GREEN, p. 2, pl. i, figg. 1–3, Ind. Mus. Notes v; *A. inusitatus* Green, cf. *Targionia*; *A. hackee* Mask., cf. *Aonidia*; *A. bambusarum* Cock., cf. *Anoplaspis*. Synonymical list of *Aspidiotus* and allies, LEONARDI, pp. 350–363, Riv. Patol. Veg. viii; *A. perniciosus*, SjöSTEDT (1224); *A. perniciosus*, shield, ecdysis, REH, (1084); *A. perniciosus*, structure of last segment and of that of allies, MEERWARTH (883); *A. perniciosus* Comst., life-history, REH (1085).
- A. (Diaspidiotus) cryptoxanthus*, Japan, COCKERELL, p. 71, Psyche ix; *A. (Hemiberlesia) candidulus*, Arizona, COCKERELL, p. 130, Canad. Ent. xxxii : n. spp.
- A. (Odonaspis) janeirensis*, p. 500, *A. (Chrysomphalus) paulistus*, p. 504, Brazil, HEMPEL, Revist. Mus. Paulista iv : n. spp.
- Asterolecanium variolosum* var. n. *japonicum*, COCKERELL, p. 71, Psyche ix.
- Aulacaspis boisduvalii* var. n. *maculata*, COCKERELL, p. 502, Revist. Mus. Paulista iii.
- Birchippia* n. g., p. 450, anomalous, for *B. anomala* n. sp., Australia, pl. xi, fig. 3, p. 451, GREEN, Ann. Nat. Hist. vi.
- Capulinia jaboticabæ*, natural history, HEMPEL (579).
- C. crateriformis*, Brazil, HEMPEL, p. 3, Canad. Ent. xxxii, n. sp.
- Ceroplastes egbarum* Cock., and *C. africanus* var. *cristatus* Green, are the same, GREEN, p. 158, Ann. Nat. Hist. v; *C. myricæ*, characters, pp. 8, 9, pl. ii, figg. 8–15, *C. rubens* Mask., queried as var., GREEN, Ind. Mus. Notes v; *C. irregularis*, number of eggs, COCKERELL, p. 201, Entomologist 1893.
- C. sinensis*, Italy, GUERCIO, p. 235, Bull. Soc. ent. Ital. xxxii; *C. amazonicus*, p. 454, *grandis*, p. 455, *novesi*, p. 457, *communis*, p. 459, *variegatus*, p. 462, *speciosus*, p. 464, *lucidus*, p. 465, *purpureus*, p. 466, *formosus*,

- p. 468, *rarus*, p. 469, *cultus*, p. 470, *cuneatus*, p. 471, *formicarius*, p. 472, *rotundus*, p. 473, *simplex*, p. 475, Brazil, HEMPEL, Revist. Mus. Paulista iv : n. spp.
- Chionaspis salicisnigræ*, p. 101, *americana*, p. 102, *platani*, p. 103, characters, HUNTER, Kansas Quart. ix.
- C. separata*, India, GREEN, p. 5, pl. i, figg. 9–12, Ind. Mus. Notes v : n. spp.
- Chrysomphalus dictyospermi*, varietal synonymy, COCKERELL, p. 157, Ent. Mag. xxxvi.
- Cryptinglisia* n. g. *Lecaniinæ*, for *C. lounsburyi* n. sp., S. Africa, COCKERELL, p. 173, Entomologist xxxiii.
- Cryptokermes brasiliensis*, Brazil, HEMPEL, p. 398, Rev. Mus. Paulista iv, n. sp.
- Ctenochiton* ? *araucariæ*, Australia, GREEN, p. 449, pl. ix, fig. 2, Ann. Nat. Hist. vi, n. sp.
- Dactylopius filamentosus* Cock.=(*vastator* Mask.), TINSLEY & COLLEGE, p. 64, Canad. Ent. xxxii.
- D. glacialis*, Italy, p. 248, *formicarius*, India, p. 249, NEWSTEAD, Ent. Mag. xxxvi ; *D. australiensis*, Victoria, GREEN, p. 13, Victorian Natural. xvii ; *D. quercus*, p. 315, *maritimus*, p. 316, California, ERHORN, Canad. Ent. xxxii ; *D. irishi*, Arizona, COCKERELL, p. 129, Canad. Ent. xxxii ; *D. texensis*, N. America, TINSLEY & COLLEGE, p. 65, t. c. ; *D. grandis*, p. 384, *setosus*, p. 386, *secretus*, p. 387, Brazil, HEMPEL, Revist. Mus. Paulista iv ; *D. grandis*, p. 395, *setosus*, p. 396, *secretus*, p. 397, Brazil, HEMPEL, Ann. Nat. Hist. vi, and Rev. Mus. Paulista iv : n. spp.
- Diaspidistis* n. g., for *D. multilobis* n. sp., Brazil, HEMPEL, p. 522, t. c.
- Diaspis piricola*, synonymy, habits, habitat, MARLATT, pp. 590–594, Ent. News Philad. xi.
- D. loranthi*, Ceylon, GREEN, p. 254, pl. F, figg. 25, 26, J. Bombay Soc. xiii ; *D. arizonicus*, Arizona, COCKERELL, p. 131, Canad. Ent. xxxii ; *D. australis*, Brazil, HEMPEL, p. 521, Revist. Mus. Paulista iv : n. spp.
- Eriochiton theæ*, India, GREEN, p. 10, pl. ii, figg. 16–23, Ind. Mus. Notes v ; *E.* ? [p. 14 queried as *Ceroplastodes*] *melaleuce*, Australia, GREEN, p. 12, Victorian Natural. xvii : n. spp.
- Eriococcus*, the Australian species, FROGGATT, Agric. Gaz. N. S. W. xi, pp. 99–107, plate ; *E. quercus toumeyii* subsp. n., COCKERELL, p. 594, Ent. News Philad. xi.
- E. perplexus*, p. 381, *armatus*, p. 383, Brazil, HEMPEL, Revist. Mus. Paulista iv ; *E. brasiliensis* (Ckll.), *perplexus*, p. 393, *armatus*, p. 394, Brazil, HEMPEL, Ann. Nat. Hist. vi, and Revist. Mus. Paulista iv : n. spp.
- Fiorinia saprosmæ*, pl. G, fig. 27, var. n. *gelonii*, fig. 28, GREEN, p. 256, J. Bombay Soc. xiii.
- F. theæ*, India, GREEN, p. 3, pl. i, figg. 4–8, Ind. Mus. Notes v ; *F. proboscidiaria*, Ceylon, p. 256, pl. G, figg. 29–32, GREEN, J. Bombay Soc. xiii ; *F. lidgetti*, Victoria, GREEN, p. 10, Victorian Natural. xvii : n. spp.
- Greeniella*, n. g. for *Aonidia corniger* Green, COCKERELL, p. 703, Amer. Natural. xxxi 1897.
- Icerya brasiliensis*, p. 370, *schrottkyi*, p. 373, HEMPEL, Revist. Mus. Paulista iv ; *I. brasiliensis*, p. 389, *schrottkyi*, p. 391, Brazil, HEMPEL, Ann. Nat. Hist. vi : n. spp.
- Kermes*, notes on the genus, the young, N. American species, pp. 78–84 ; *K. galliformis* var. *cueroensis* n. var., p. 79, KING, Psyche ix ; *Kermes*, table of N. American, COCKERELL (281).
- K. trinotatus*, N. America, BOGUE, p. 205, Canad. Ent. xxxii ; *K. perryi*, Massachusetts, KING, p. 81, Psyche ix ; *K. andrei*, Massachusetts, KING, p. 22, t. c. : n. spp.



- Lecaniodiaspis rugosus*, Brazil, HEMPEL, p. 407, Revist. Mus. Paulista iv, n. sp.
- Lecanium hemisphaericum*, var. *coffee*, note, GREEN, p. 7, Ind. Mus. Notes v; *L. robiniarum* var., COCKERELL & PARROTT, p. 367, Sci. Gossip vi.
- L. watti*, India, GREEN, p. 6, pl. ii, figg. 1-5, Ind. Mus. Notes v; *L. cerasorum*, Japan, COCKERELL, p. 70, Psyche ix; *L. silveirai*, *obscurum*, Brazil, HEMPEL, p. 5, Canad. Ent. xxxii; *L. perconvexum*, Brazil, COCKERELL, p. 41, Revist. Mus. Paulista iii; *L. (Calymnatus) rhizophoræ*, Brazil, COCKERELL, p. 501, t. c.; *L. brunfelsia*, p. 418, *gracile*, p. 419, *ornatum*, p. 421, *durum*, p. 427, *glanulosum*, p. 428, *zanthoxylum*, p. 430, *infrequens*, p. 431, *discoides*, p. 433, *mayteni*, p. 438, *eugenie*, p. 439, *jaboticabæ*, p. 443, *lanigerum*, p. 446, *campomanesiae*, p. 447, Brazil, HEMPEL, op. cit. iv : n. spp.
- Lichtensia argentata*, p. 492, *L. ? attenuata*, p. 494, Brazil, HEMPEL, t. c. n. spp.
- Mytilaspis lasianthi*, p. 253, *pallida* (= *gloverii* var. olim), p. 254, Ceylon, GREEN, J. Bombay Soc. xiii; *M. indentata*, Australia, GREEN, p. 448, pl. xi, fig. 1, Ann. Nat. Hist. vi; *M. bicornis*, Victoria, GREEN, p. 9, Victorian Natural. xvii; *M. perlonga*, Brazil, COCKERELL, p. 42, Revist. Mus. Paulista iii; *M. argentatus*, Brazil, COCKERELL, p. 43, t. c. : n. spp.
- Odonaspis canaliculatus*, Ceylon, GREEN, p. 72, pl. B, figg. 6, 7, 8, c fig. 9, J. Bombay Soc. xiii, n. sp.
- Oudablis* and *Phenacoccus*, characters and relations, males, the former a subgen. of *Dactylopius*, COCKERELL, pp. 85-87, Entomologist xxxiii.
- Parlatoria*; the species and subgenera, with *websteriella* subg. n. for the *P. zizyphi* group, LEONARDI, Riv. Patol. Veg. viii, pp. 203-209; *P. pergandei*, characters, HUNTER, p. 105, Kansas quart. ix.
- Paroudablis* subgn. of *Phenacoccus*, for *P. helianthi* etc., COCKERELL, p. 87, Entomologist xxxiii.
- Perissopneumon* n. g. *Monophlebides*, for *P. ferox* n. sp., India, in nests of *Oecophylla* built for the purpose of its accommodation, NEWSTEAD, p. 250, Ent. Mag. xxxvi.
- Phenacapsis* n. g., not described, for part of *Chionaspis*, COCKERELL, 1st Suppl. Check-list Cocc., p. 398 (omitted last year).
- Phenacoccus* cf. *Oudablis*, *Paroudablis*.
- P. artemisiæ*, *stachyos*, p. 313, *bahie*, p. 314, California, EHRHORN, Canad. Ent. xxxii; *P. spiriferus*, Brazil, HEMPEL, p. 389, Revist. Mus. Paulista iv : n. spp.
- Protopulvinaria convexa*, Brazil, HEMPEL, p. 485, Revist. Mus. Paulista iv, n. sp.
- Pseudischnaspis* n. g. for *P. linearis* n. sp., Brazil, HEMPEL, p. 506, t. c.
- Pseudoparlatoria parlatorioides*, characters and larva, COCKERELL, p. 503, Revist. Mus. Paulista iii.
- P. noacki*, Brazil, COCKERELL, p. 42, t. c., n. sp.
- Pseudoripersia* subg. n. of *Ripersia*, COCKERELL, 1st Suppl. Check-list Cocc., p. 392 (omitted last year).
- Pulvinaria phaiæ*, *brassicæ*, *floccifera*, queried as identical, COCKERELL, p. 596, Ent. News Philad. xi; *P. floccifera* Westw., characters, GREEN, p. 7, Ind. Mus. Notes v; *P. innumerabilis*, *acericola*, natural history, HOWARD (616).
- P. pruni*, Kansas, HUNTER, Kansas quart. ix, p. 104; *P. tinstleyi*, New Mexico, KING, p. 360, Canad. Ent. xxxii; *P. ficus*, p. 486, *eugenie*, p. 488, *depressa*, p. 490, *grandis*, p. 491, Brazil, HEMPEL, Revist. Mus. Paulista iv : n. spp.
- Ripersia formicola*, habits, SMITH, p. 8, Ent. Mag. xxxvi.
- R. wasmanni*, Germany, NEWSTEAD, p. 249, Ent. Mag. xxxvi; *R. sacchari*,



- India, GREEN, p. 37, pl. vi, figg. 5, 6, Ind. Mus. Notes v; *R. serrata*, Trinidad, TINSLEY & COLLEGE, p. 66, Canad. Ent. xxxii : n. spp.
- Solenococcus* n. n. for *Solenophora*, COCKERELL, 1st Suppl. Check-list Cocc., p. 392 (omitted last year).
- S. tuberculus*, p. 390, *baccharidis*, p. 392, Brazil, HEMPEL, Revist. Mus. Paulista iv : n. spp.
- Stigmatococcus* n. g. *Coccinæ*, p. 399, for *S. asper*, n. sp., Brazil, p. 400, HEMPEL, t. c.
- Tachardia cydoniæ*, p. 410, *rubra*, p. 411, *parva*, p. 413, *rosæ*, p. 414, *ingæ*, p. 415, Brazil, HEMPEL, t. c., n. spp.
- Targionia*, monograph, with subg. n. *Froggattiella* for *Aspidiotus inusitatus*, Green, LEONARDI, pp. 298–320, Riv. Patol. Veg. viii.
- Tectococcus* n. g. *Coccinæ*, for *T. oratus* n. sp., Brazil, HEMPEL, p. 406, Revist. Mus. Paulista iv.
- Tectopulvinaria* n. g. *Lecaninæ*, p. 482, for *T. albata* n. sp., Brazil, p. 483, HEMPEL, t. c.
- Walkeriana pertinax*, Zomba, NEWSTEAD, p. 947, pl. lix, P. Zool. Soc. London 1900, n. sp.
- Websteriella* subg. n. cf. *Parlatoria*.
- Xerophilaspis parkinsoniæ*, Arizona, COCKERELL, p. 131, Canad. Ent. xxxii, n. sp.
- Xylococcus quercus*, California, EHRHORN, p. 311, Canad. Ent. xxxii, n. sp.

## ANOPLURA.

Clinical bibliography, HUBER (618).

- Hæmatopinus columbianus*, N. America on *Spermophilus columbianus*, OSBORN, p. 215, Canad. Ent. xxxii, n. sp.

## (F.) NEUROPTERA.

## TRICHOPTERA.

[Cf. BANKS (63, 64, 264), FABRE (385), Klapálek (734), Lameere (794), MORTON (928).]

*Agrypnetes curvata*, Minnesota, BANKS, p. 252, Tr. Amer. ent. Soc. xxvi, n. sp.

*Apatania tripunctata*, Alaska, BANKS, p. 472, P. Washington Ac. ii, n. sp.

*Asynarchus simplex*, p. 469, *fumosus*, *flavicollis*, p. 470, *alascensis*, p. 471, Alaska, BANKS, t. c.; *A. centralis*, p. 253, *tristis*, p. 254, N. America, BANKS, Tr. Amer. ent. Soc. xxvi : n. spp.

*Chetopterygopsis apfelbecki*, Bosnia, Klapálek, p. 676, Wiss. Mitt. Bosnien vii; *C. parvula*, N. America, BANKS, p. 256, Tr. Amer. ent. Soc. xxvi : n. spp.

*Drusus bosnicus*, Bosnia, Klapálek, p. 674, Wiss. Mitt. Bosnien vii, n. sp.

*Glossosoma alascensis*, Alaska, BANKS, p. 472, P. Washington Ac. ii, n. sp.

*Halesus? alascensis*, Alaska, BANKS, p. 471, t. c.; *H. formosus*, Colorado, BANKS, p. 255, Tr. Amer. ent. Soc. xxvi : n. spp.

*Heteropteron nigripennis*, p. 256, *mexicanum*, p. 257, N. America, BANKS, t. c. n. spp.

*Homophylax* n. g. *Limnophilides*, for *H. flavipennis* n. sp., Colorado, BANKS, p. 255, t. c.

*Hydropsyche nervosa*, Sarajevo, Klapálek, p. 678, Wiss. Mitt. Bosnien vii; *H. occidentalis*, *grandis*, N. America, BANKS, p. 258, Tr. Amer. ent. Soc. xxvi, n. spp.

*Leptocella minuta*, Washington, BANKS, p. 257, t. c. n. sp.

*Leptophylax* n. g. for *L. gracilis* n. sp., Minnesota, BANKS, p. 252, t. c.

*Limnophilus flavicornis*, case-making, FABRE (385).

*L. harrimani*, *kincaidi*, Alaska, BANKS, p. 468, P. Washington Ac. ii; *L. americanus*, *consimilis*, N. America, BANKS, p. 253, Tr. Amer. ent. Soc. xxvi; *L. cockerelli*, New Mexico alpine, BANKS, p. 124, Psyche ix : n. spp.

*Notidobia americana*, Virginia, BANKS, p. 256, Tr. Amer. ent. Soc. xxvi, n. sp.

*Oecetina guttata*, New Jersey, BANKS, p. 257, t. c. n. sp.

*Philopotamus barrettæ*, Mexico, BANKS, p. 259, t. c. n. sp.

*Polycentropus variegatus*, Washington, BANKS, p. 259, t. c. n. sp.

*Potamorites virginica*, N. America, BANKS, p. 256, t. c. n. sp.

*Potamyia* n. g. type *Macronema flava* Hag., BANKS, p. 259, t. c.

*Rhyacophila lanceolata*, p. 2, *tecta*, p. 4, *curvata*, *scissa*, p. 5, *anatina*, *naviculata*, p. 6, *inconspicua*, p. 7, India, *japonica*, p. 3, *articulata*, p. 5, Japan, MORTON, Tr. ent. Soc. London 1900; *R. mexicana*, Vera Cruz, BANKS, p. 259, Tr. Amer. ent. Soc. xxvi : n. spp.

*Stenophylax pallidus*, Bosnia, Klapálek, p. 673, Wiss. Mitt. Bosnien vii; *S. pacificus*, *antennatus*, Washington, BANKS, p. 254, Tr. Amer. ent. Soc. xxvi : n. spp.

*Triënodes borealis*, Minnesota, *flavescens*, New Brunswick, BANKS, p. 257, t. c. n. spp.

## NEUROPTERA-PLANIPENNIA.

[Cf. BANKS (63, 67), KIRBY (721, 725), KOLBE (749), LAMEERE (794), McLACHLAN (876), MOFFAT (915).]

*Chasmatoptera* n. g. for *Nemoptera huttii* Westw., KIRBY, p. 462, Ann. Nat. Hist. vi.

*Chrysopa*; eggs parasitised, MOFFAT (915); *C. spp.*, Java, natural history, ZEHNTNER, pp. 13–18, pl. ii, figg. 28–33, Pflanzenl. x.

*Formicaleo morpheus*, Christmas Is., KIRBY, p. 140, pl. xiv, fig. 3, Monogr. Christmas Island, n. sp.

*Halter bettoni*, E. Africa, KIRBY, p. 460, Ann. Nat. Hist. vi, n. sp.

*Hemerobius*: notes on Scottish, MORTON, pp. 30–32, Ann. Scott. Nat. Hist. 1900.

*Leucochrysa mexicana*, Vera Cruz, BANKS, p. 251, Tr. Amer. ent. Soc. xxvi, n. sp.

*Mantispa mimetica*, Borneo, McLACHLAN, p. 127, Ent. Mag. xxxvi, n. sp.

*Myrmecoleon* and *Formicaleo* near Berlin, REY, Berlin. ent. Zeitschr. xlv, SB. p. 49.

*Myrmecoleon iridescens*, Christmas Is., KIRBY, p. 140, pl. xiv, fig. 4, Monogr. Christmas Island; *M. texanum*, Galveston, BANKS, p. 596, Ent. News Philad. xi : n. spp.

*Nemopteridæ*; Synonymical Catalogue, KIRBY, Ann. Nat. Hist. vi, pp. 456–464.

*Nemoptera remipennis*, Lake Nyassa, p. 13, *togonica*, W. Africa, p. 14, *biremis*, S. Africa, p. 16, KOLBE, SB. Ges. naturf. Berlin 1900, n. spp.

*Osmylus* sp., Java, natural history, ZEHNTNER, pp. 18–20, pl. i, figg. 7–10, Pflanzenl. x.

*Palpares papilionides* var., *P. walkeri* ♀, McLACHLAN, p. 34, P. Zool. Soc. London 1900.

*Panorpa signifer*, Michigan, BANKS, p. 251, Tr. Amer. ent. Soc. xxvi, n. sp.

## PSEUDO-NEUROPTERA.

## MALLOPHAGA.

*Colpocephalum patulum*, Alaska, on *Arenaria interpres*, KELLOGG & KUWANA, p. 157, pl. vii, fig. 4, P. Ac. Philad. 1900, n. sp.

*Docophorus alaskensis*, Alaska, on *Rhodostethia rosea*, KELLOGG & KUWANA, p. 151, pl. vii, fig. 1, t. c. n. sp.

*Lipeurus macilhennyi*, Alaska, on *Diomedea nigripes*, KELLOGG & KUWANA, t. c. p. 155, pl. vii, fig. 3, n. sp.

*Menopon corporosum*, Alaska, on *Crymophilus fulcarius*, KELLOGG & KUWANA, p. 158, pl. vii, fig. 3, t. c. n. sp.

*Nirmus infectus*, Alaska, on *Crymophilus fulcarius*, KELLOGG & KUWANA, p. 153, pl. vii, fig. 2, t. c. n. sp.

## PSOCIDÆ.

[Cf. BANKS (63, 65, 66), ENDERLEIN (377, 378), LAMEERE (794), McLACHLAN (877), RIBAGA (1110–1113).]

Brachypterous females, McLACHLAN (877).

Variation of wing-nervures, McLACHLAN, p. 14, Ent. Mag. xxxvi.

Internal anatomy of *Trichopsocus dalii*, RIBAGA (1112).

The *Psocidæ* of Italy: list of 38 species with notes, RIBAGA, Riv. Patol. Veg. viii, pp. 375–386.

- Amphigerontia bicolor*, p. 144, pl. ix, fig. 9, *cinctipes*, fig. 10, *hemiphaeoptera*, fig. 11, p. 145, with var. *hyalina*, p. 146, ENDERLEIN, Zool. Jahrb. Syst. xiv, n. spp.
- Bertkauia prisca* in England, McLACHLAN, pp. 220, 221, Ent. Mag. xxxvi.
- Ectopsocus berlesii*, Italy, RIBAGA, p. 364, Riv. Patol. Veg. viii, n. sp.
- Elipsocus viridimicans*, Peru, ENDERLEIN, p. 155, pl. ix, fig. 22, Zool. Jahrb. Syst. xiv, n. sp.
- Epipsocus*; characters, comparison of living and amber species, ENDERLEIN, pp. 108–110, Berlin. ent. Zeitschr. xlv.
- E. nepos*, Peru, ENDERLEIN, p. 111, t. c. figures, pl. ix, figg. 15, 16, p. 150, Zool. Jahrb. Syst. xiv, n. sp.
- Graphocæcilius* n. g. *Cæciliini*, p. 155, for *G. trypetoides* n. sp., Peru, p. 156, pl. ix, fig. 23, ENDERLEIN, t. c.
- Ischnopteryx* n. g. *Thyrsopterini*, for *I. calocoroides* n. sp., Peru, pl. viii, fig. 2, ENDERLEIN, p. 139, t. c.
- Neopsocus callanganus*, Peru, ENDERLEIN, p. 147, pl. ix, fig. 12, t. c. n. sp.
- Neurostigma* n. g. *Peripsocini*, p. 157, for *N. chætocephalum* n. sp., Peru, p. 158, pl. ix, fig. 24, ENDERLEIN, t. c.
- Polypsocus lunulatus*, Peru, ENDERLEIN, p. 154, pl. ix, fig. 21, t. c. n. sp.
- Psocathropos* n. g., p. 156, for *P. lachlani* n. sp., Italy, p. 157, pl. vii, RIBAGA, Riv. Patol. Veg. viii.
- Psocinella* n. g. near *Dorypteryx*, p. 431, for *P. slossonæ* n. sp., Florida, p. 432, BANKS, Ent. News Philad. xi.
- Psocus oregonus*, *virginianus*, N. America, *barretti*, Mexico, BANKS, p. 239, Tr. Amer. ent. Soc. xxvi; *P. ochraceocristatus*, pl. viii, fig. 13, with var. *conjungens*, Peru, ENDERLEIN, p. 146, Zool. Jahrb. Syst. xiv : n. spp.
- Ptiloneura* n. g., p. 147, *Cæciliini*, for *P. bidorsalis* with var. *octoplumosa* n. sp., Peru, p. 149, pl. ix, fig. 14, ENDERLEIN, t. c.
- Ptilopsocus* n. g. *Cæciliini*, p. 150, for *P. fuscus*, pl. ix, fig. 17, *desectus*, fig. 18, p. 151, *quadriguttatus*, fig. 19, *griseolineatus*, fig. 20, p. 152, n. spp., Peru, ENDERLEIN, t. c.
- Teratopsocus maculipennis* a brachypterous form of *Graphopsocus cruciatus*, McLACHLAN, Ent. Mag. xxxvi, p. 6.
- Thyrsophorus metallicus*, Peru, ENDERLEIN, p. 138, pl. viii, fig. 1, Zool. Jahrb. Syst. xiv, n. sp.
- Thyrsoopsocus* n. g., p. 140, for *T. peruanus*, p. 141, pl. viii, fig. 3, *psocoides*, p. 143, with varr. *pedunculata*, fig. 7, *duplopostica*, fig. 8, p. 144, n. spp., Peru, ENDERLEIN, t. c.; *T. bellus* (MacL.) var. n. *fuscusignatus*, ENDERLEIN, p. 142, pl. viii, fig. 4, t. c.
- Troctes bicolor*, p. 559, *niger*, p. 60, N. America, BANKS, Ent. News Philad. xi, n. spp.

## TERMITIDÆ.

[Cf. ERRINGTON (379), FAIRCHILD & COOK (388), GOUNELLE (515), HEYMONS (591), KNOWER (738), SJÖSTEDT (1221), WASMANN (1070, 1378).]

Monograph of African *Termitidæ*, 82 species, SJÖSTEDT, Svenska Ak. Handl. xxxiv, No. 4. We mention below only the new species given in this important article: it deals with 82 species, and includes a bibliography of Termitid literature from other parts of the world supplementary to that of Hagen.

Embryology, KNOWER (738), HEYMONS (591).

Production of sound, GOUNELLE (515).

Note on habits of *Termes carbonarius*, ERRINGTON (379).

The structure of a termitarium sp.?, in India, RODON, p. 363, J. Bombay Soc. xiii.



Termites and fungi, HOLTERMANN (598).

W. African Termites and their fungi, FAIRCHILD & COOK (388).

*Coleoptera* frequenting termitaria in S. Africa, PÉRINGUEY, pp. 66–68, Ann. Soc. ent. France lxix.

Termitophilous *Diptera* in S. Africa, WASMANN (1378).

*Acanthotermes* n. g., p. 54, for *Termes militaris* Hag., etc., SJÖSTEDT, Svenska Ak. Handl. xxxiv, No. 4.

*Calotermes camerunensis* (= *robustus* Sjöst. 1897), p. 39, *havilandi* (= *domesticus* Sjöst. nec Hav.), p. 43, Africa, SJÖSTEDT, t. c. n. spp.

*Coptotermes raffrayi*, Swan River, WASMANN, p. 244, P. Linn. Soc. N. S. Wales xxv, n. sp.

*Eutermes trinervius*, nests, habits, CLEMENTS, pp. 86–88, Tr. Manchester Micr. Soc. 1899.

*Hodotermes wasmanni*, N. Africa, SJÖSTEDT, p. 33, Svenska Ak. Handl. xxxiv, No. 4, n. sp.

*Termes angustipennis*, p. 115, Africa, SJÖSTEDT, t. c. n. sp.

### EMBIIDÆ.

*Embia æthiopicorum*, W. Africa, KARSCH, p. 79, Ent. Nachr. xxvi, n. sp.

### PERLIDÆ.

[Cf. BANKS (63), KEMPNY (688, 689), LAMEERE (794).]

The tribes and classification of *Perlidae*, BANKS, p. 240, Tr. Amer. ent. Soc. xxvi.

The *Perlidae* of Norway, 25 species, KEMPNY (688).

*Acroneuria pacifica*, Washington, BANKS, p. 242, Tr. Amer. ent. Soc. xxvi, n. sp.

*Capnura* n. g. for *C. venosa*, n. sp., Washington, BANKS, p. 245, t. c.

*Chloroperla*; the sexual characters, KEMPNY, pp. 91, 92, Verh. Ges. Wien l.

*C. strandi*, Norway, id. t. c., p. 93; *C. minuta*, Ohio, BANKS, p. 244, Tr. Amer. ent. Soc. xxvi : n. spp.

*Dictyopteryx norvegica*, Norway, KEMPNY, p. 86, Verh. Ges. Wien l; *D. irregularis*, Washington, BANKS, p. 243, Tr. Amer. ent. Soc. xxvi : n. spp.

*Isogenus nubecula*?, description, with provisional name *rectus*, KEMPNY, p. 88, Verh. Ges. Wien l.

*I. nanseni*, Norway, id. p. 90, t. c. n. sp.

*Leuctra handlirschi* var. n. *teriolensis*, p. 256, *L. inermis* var. of *handlirschi*, p. 257, KEMPNY, Verh. Ges. Wien l.

*L. rosinae*, Tyrol, KEMPNY, p. 257, t. c. n. sp.

*Nemura marginata* Kemp. and *præcox* Mort. are the same, KEMPNY, p. 258, t. c.

*N. stigmata*, Winnipeg, BANKS, p. 244, Tr. Amer. ent. Soc. xxvi, n. sp.

*Perla sabulosa*, p. 242, *americana*, p. 243, N. America, BANKS, t. c. n. spp.

*Perlinella* n. g. type *Perla trivittata* Banks, BANKS, p. 242, t. c.

*Pteronarcella* n. g. type *Pteronarcys regularis* Hag., BANKS, p. 242, t. c.

*Teniopteryx pacifica, occidentalis*, Washington, BANKS, p. 244, t. c. n. spp.

### EPHEMERIDÆ.

[Cf. BANKS (63), CIACCIO (259), LAMEERE (794), MOCSÁRY (913).]

Classification of *Ephemeridæ* and tabulation of genera, BANKS, pp. 245–247, Tr. Amer. ent. Soc. xxvi.

- Leptophlebia basalis*, N. America, BANKS, p. 248, t. c. n. sp.  
*Callibaetis floridanus, californicus*, p. 249, *americanus, coloradensis*, p. 250,  
*pallidus*, p. 251, N. America, BANKS, t. c. n. spp.

## ODONATA.

[Cf. EAST (366), FOERSTER (431, 432), KARSCH (672), KIRBY (717, 718, 719), LAMEERE (794), LUCAS (833, 834), McLACHLAN (878), RIS (1119), RÖSSLER (1133), SJÖSTEDT (1222), THERESE VON BAYERN (1317), TOUGH (1327), TÜMPEL (1337), WILLIAMSON (1417).]

*Odonata* of Slavonia and Dalmatia, RÖSSLER (1133).

*Odonata* from Cameroons, 46 spp., 14 new, SJÖSTEDT (1222); descriptions and synonymy are given for many of the species: below we record only the novelties.

Notes on 33 species found by Kükenthal in the Malay Archipelago, KARSCH, Abh. Senckenb. Ges. xxv, pp. 211-230.

List of genera of Australian *Odonata*, BILLINGHURST, pp. 5-10, Victorian Natural. xvii.

Notes on nymphs from the Bismarck Arch., *Tramea rosenbergi* etc., RIS, pp. 201-203.

The first moult, CALVERT, p. 350, Entomologist xxxiii.

Nymphs living out of water, EAST, pp. 211, 212, t. c.

Notes on respiration of nymphs, EAST (366).

*Odonata* eaten by birds, MOORE, p. 340, Ent. News Philad. xi.

TÜMPEL (1337) completed.

Synonymy of old English literature, LUCAS (834).

Synonymy of old British works, LUCAS, Entomologist xxxiii, fere passim.

*Æshna thomassoni*, Hainan, KIRBY, p. 534, Ann. Nat. Hist. xii, n. sp.

*Agrion (Cænagrion) holdereri*, Centr. Asia, FOERSTER, p. 264, pl. iii, figg. 1-4, Wien. ent. Zeit. xix, n. sp.

*Agrionoptera*; character of the allied genera, KARSCH, pp. 221-230, Abh. Senckenb. Ges. xxv; two species only, RIS, pp. 182, 183, Arch. Naturg. lxvi.

*Anatya spuria, theresæ*, Colombia, SELYS, p. 264, and 260, pl. iii, figg. 3, 4, Berlin. ent. Zeitschr. xlv, n. spp.

*Anax selysii*, New Guinea, FÖRSTER, p. 88, Termes. Fuzetek xxiii, n. sp.

*Apeleutherus* n. g. near *Thermorthemis*, p. 73, for *A. strachani*, n. sp., Sierra Leone, p. 74, pl. ii, fig. 4, KIRBY, Ann. Nat. Hist. vi.

*Argiocnemis martini*, Bismarck Arch., RIS, p. 199, Arch. Naturg. lxvi, n. sp.

*Bebblecia* n. g. near *Trithemis* for *B. adolescens* n. sp., Sierra Leone, KIRBY,

p. 71, Ann. Nat. Hist. vi.

*Camacinia harmandi*, Sikkim, MARTIN, p. 103, Bull. Mus. Paris 1900, n. sp.

*Cænagrion glaucum*, Cameroons, SJÖSTEDT, p. 61, Bih. Svenska Ak. xxv, no. 2, n. sp.

*Cratilla* n. g. for *Orthemis metallica* Brauer, KIRBY, p. 542, Ann. Nat. Hist. v.

*Enallagma cyathigerum* var. figg. McLACHLAN, p. 111, Ent. Mag. xxxvi; *E. annexum, caloerti*, distinguished, WILLIAMSON, p. 455, pl. ix, Ent. News Philad. xi.

*E. anna*, N. America, WILLIAMSON, p. 455, pl. ix, figg. 1, 2, t. c., n. sp.

*Epithea bimaculata*, habits, FRÖHLICH, pp. 379-382, Ent. Nachr. xxvi.

*Gomphus cornutus*, Illinois, TOUGH, p. 17, Mem. Chicago ent. Soc. i, n. sp.

*Gyracantha*, validity discussed, p. 91, *G. rosenbergi*, characters, p. 101, FÖRSTER, Termes. Fuzetek xxiii.

*G. simillima*, New Guinea, FÖRSTER, p. 98, t. c., n. sp.

*Hylæschia* n. g., *Allopetalia*, for *H. paludis* n. sp., Cameroons, SJÖSTEDT, p. 40, Bih. Svenska Ak. xxv, no. 2.

- Karschia* n. g. near *Gynacantha*, p. 91, for *K. cornuta*, p. 94, *angulata*, p. 96, n. spp., New Guinea, FÖRSTER, Termes. Fuzetek xxiii; *Karschia* is synonym of *Gynacantha*, KARSCH, p. 213, with note on classification of subfam. *Libellulinae*, p. 217, Abh. Senckenb. Ges. xxv.
- Lestes sponsa*, nymph, LUCAS, p. 142, Entomologist xxxiii.
- Leucorrhinia dubia*, migration, IMMS, p. 189, Ent. Mag. xxxvi.
- Libellago glaucifrons*, p. 51, *neptunus*, p. 54, *camerunensis*, p. 56, *grandis*, p. 58, Cameroons, SJÖSTEDT, Bih. Svenska Ak. xxv, no. 2, n. spp.
- Libellula quadrimaculata*, migrations, McLACHLAN (878); *L. quadrimaculata* swarm in England, LUCAS (833); swarm in Antwerp, Ent. Nachr. xxvi, p. 253.
- Macromia selysi*, Sierra Leone, KIRBY, p. 77, Ann. Nat. Hist. vi; *M. terpsichore*, New Guinea, FÖRSTER, p. 86, Termes. Fuzetek xxiii: n. spp.
- Mesothemis mithroides*, Colombia, BRAUER, p. 266, cut p. 261, pl. iii, fig. 5, Berlin. ent. Zeitschr. xlv, n. sp.
- Micrathyria septima*, SELYS, p. 265, pl. iii, fig. 6, Berlin. ent. Zeitschr. xlv, n. sp.
- Monocloptera* n. g. near *Agrionoptera*, p. 228, for *M. kukenthali*, n. sp. Borneo, p. 229, KARSCH, Abh. Senckenb. Ges. xxv.
- Nannophlebia imitans*, Bismarck Arch., RIS, p. 189, Arch. Naturg. lxvi, n. sp.
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- Orthetrum julia*, Sierra Leone, KIRBY, p. 75, pl. ii, fig. 3, Ann. Nat. Hist. vi, n. sp.
- Perithemis* *ultrix* var. n. *californica*, MARTIN, p. 104, Bull. Mus. Paris 1900.
- Phaon camerunensis*, W. Africa, SJÖSTEDT, Bih. Svenska Ak. xxv No. 2, p. 48, n. sp.
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- Forficula auricularia*, food, KIRKALDY, p. 87, Entomologist xxxiii; *F. auricularia* in bee-hives, BUYSSON, p. 183, Bull. Soc. ent. France 1900.
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- Hormetica advena*, Massachusetts, SCUDDER, p. 94, P. Davenport Ac. viii, n. sp.
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BY

F. A. BATHER.

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## INTRODUCTION.

I. TITLES. The large size of the present Record of Echinoderm literature is due partly to a desire to clear up everything from the nineteenth century, or rather from the last decade of it. This has resulted in the discovery of 113 titles omitted from previous lists, namely 1888, 1; 1890, 2; 1891, 2; 1892, 2; 1893, 1; 1894, 1; 1895, 3; 1896, 16; 1897, 28; 1898, 18; 1899, 39. But the year 1900 has itself yielded 257 works, a far larger number than any previous year. Other publications of 1900, and a few of previous years, believed to deal with Echinoderms, are still unseen in spite of every effort, including direct personal appeals to authors and publishers. Notwithstanding these omissions, and disregarding the usual uncertainty as to the date of many papers, a steady increase in Echinoderm literature is traceable from 1894 onward.

It is occasionally suggested that the growing bulk of the Record might be checked by ignoring the less important publications. But it is impossible for one man to decide which papers are or are not of value for each one of his fellow-workers. The function of a Record is to indicate the contents of the literature in such a way that each reader can himself decide whether or no he wishes to see any particular publication. The inclusion of a title or of an observation in the Record does not imply (as some users of the Record think) that the article is a good one or that the observation is correct; still less is the Recorder responsible for opinions and criticisms quoted from other writers. To enforce this point, the insertion of cautionary remarks in [ ] has been somewhat extended in the present volume, while a rather more judicial tone than usual has been adopted in this Introduction.

II. BIOLOGY. A. It is a pity that CUÉNOT's views on Echinoderm evolution (74) should have been buried in a short-lived serial inaccessible to most zoologists. There are few now who uphold the descent of all Echinoderms from Holothurians, still fewer who, in conjunction therewith, maintain the homologies of the calycinal system in all their rigour, and the well-considered expression of these opinions by so thorough an anatomist deserved the compliment of refutation. Assuredly they in no way harmonise with the complete scheme of race-history outlined by GREGORY & BATHER (19), in which the peculiarities of Echinoderm structure and development are attributed to the fixation of the *Dipleurula* ancestor by its pre-oral lobe, a stage in which the *Pelmatozoa* remained, while the Eleutherozoan classes independently reverted to a free mode of life, a probable link being furnished by the *Edrioasteroidea*. Though retaining the pelmatozoic ancestor, implied in the usual statements of the calycinal theory, these authors adduce the evidence of fossils against the view that the apical systems of the various Classes are homogenetic. Although some observations of LUDWIG on recent *Ophiuroidea* have shown the supposed apical system to be more pronounced in the young, yet both the anatomist HAMANN (148) and the palaeontologist STUERTZ (325) deny its ancestral nature. There will of course be much dispute as to the correctness of various details in the history of the Phylum as given in the treatise (19) above referred to, but the attempt to give a complete phylogenetic classification of all genera, fossil and recent, was worth making.

The phylogeny of the *Pelmatozoa* was touched on in last year's Record (p. 5): we may now see what agreement there is concerning other Classes. GREGORY (19) lays great stress on the resemblance of *Ophiuroidea* to *Asteroidea*, to which HAMANN (148) replies that the Class is no more closely related to *Asteroidea* than it is to any other Class of Echinoderms. Some of the arguments most reiterated by GREGORY have been shown by his critics to be devoid of foundation, and there is no doubt but that the trend of evolution in the two Classes has been quite distinct and that no confusion need exist between their Neozoic representatives. At the same time, as insisted on by STUERTZ (325), the Palaeozoic *Ophiuroidea* approach the *Asteroidea* in many important structural features; and HAMANN's vehement assertions can scarcely be reconciled with GREGORY's incontrovertible statement that both are eleutherozoic, actinogonidial, lysactinic, with ambulacral plates internal to the radial ambulacral vessels. As was to be expected, GREGORY has set aside the previous classifications of each of these Classes into a Palaeozoic and a Neozoic Order. The ancient *Asteroidea* are now distributed by him among the *Cryptozonia* and *Phanerozonia* of SLADEN, a mode of treatment also adopted by STUERTZ; but there is a general opinion that these divisions are not satisfactory even for recent forms; much more careful work is needed on Palaeozoic genera before the true lines of separation can be established. The classification of *Ophiuroidea*, based on a previous one by BELL, is maintained by

GREGORY; and STUART, though he criticises GREGORY's nomenclature and certain details, accepts the essential features of it, which indeed were first enunciated by himself. The classification, however, is not truly phylogenetic and its divisions are not congruous with one another: the *Lysophiuræ* Greg. (= *Ophio-encrinasteriæ* Stuart) are a primitive assemblage from which are descended the older *Streptophiuræ* (= *Protophiuræ* Stuart); these in turn seem to have given rise to three branches—"the living *Streptophiuræ*" (not further classified by GREGORY), the *Zygophiuræ*, and the *Cladophiuræ* (= *Euryalida*). These facts are obscured by the establishment of four equivalent Orders. Mention of the living *Streptophiuræ* reminds one that VERRILL (341) has made Families for most of them, and has revised the Families of *Cladophiuræ* and *Zygophiuræ*, but he confines himself to living genera, especially those of the W. Atlantic, and lays down no principles of wider application. It is to be hoped that HAMANN, in his treatment of this difficult question, will pay due attention to the extinct forms: after the publication of "The *Echinoderma*" in LANKESTER's "Zoology" (19) no classification that omits the fossils can be considered as other than a trifling with the subject.

It is interesting to compare the classifications of the *Echinoidea* given by GREGORY (19) and LAMBERT (187). Apart from differences of opinion as to the limits of Families or the position of certain genera, the Orders of GREGORY are much the same as the Sub-orders of LAMBERT, being taken from DUNCAN & ZITTEL; but, as will be seen from a tabular statement, they are divided up differently:—

| GREGORY        | ORDERS OR SUBORDERS          | LAMBERT       |
|----------------|------------------------------|---------------|
|                | Cystocidaroida .....         | Plagiocysta   |
| Regularia      | Bothriocidaroida             | } Endocysta   |
| Endobranchiata | Cidaroida                    |               |
|                | Melonitoida                  |               |
|                | Plesiocidaroida              |               |
| Regularia      | Diademoida .....             | Glyphostomata |
| Ectobranchiata |                              | } Exocysta    |
|                | Gnathostomata (Zittel) ..... |               |
| Irregularia    | Atelostomata (Zittel) .....  | Atelostomata  |

There is here no essential discrepancy. The facts of structure are admitted, and, speaking broadly, it is agreed that the Orders form a linear evolutionary series. Consequently the various divisions represent merely grades of structure, not divergent branches, and the major lines can be drawn almost anywhere, as each author thinks best, without change in the fundamental arrangement. But no permutation will turn this into a representation of phylogenetic affinity. What must now be studied is the relation of species to species, and genus to genus, by which method alone can the true lines of descent be traced across the arbitrary and artificial barriers of the existing classifications.

B. Descending to details of Anatomy, we find no novelties under *Holothurioidæ*. The elementary student of *Echinoidea* has a choice of three accounts of *Echinus esculentus*, each with its own good points (19, 59, & 75). The systematist should utilise HESSE's detailed description of the micro-structure of spines. The morphologist will find many interesting studies in the valuable memoir of LAMBERT (187) on early Mesozoic Echinoids, notably that on the coalescence of primary ambulacra, a process which he ascribes to the preponderating growth of a tubercle on one plate causing it to overlap adjacent plates; the coalescence is therefore not due to a lateral pressure resulting from the addition of fresh ambulacra at the apex, as supposed by LOVÉN & DUNCAN, but is a minor phenomenon



caused by the superficial growth in thickness of the test. BEDFORD'S (25) highly important discovery in *Asthenosoma* of a deeper nerve-layer forming ganglia on each side of the radial peri-haemal canal, demands special notice, since the lamented death of the author has deprived us of the promised memoir, in which he would doubtless have emphasized the homology of this with the deeper paired radial nerves already known in the other Echinoderm Classes. The two parts of Bronn's *Klassen und Ordnungen d. Thierreichs* published during the year contain an excellent account of the anatomy and ontogeny of recent *Ophiuroidea* by HAMANN (148), while the morphologist cannot afford to neglect the notes on Palaeozoic *Ophiuroidea* and *Asteroidea* furnished by STUERTZ (325). APOSTOLIDÉS' (17) account of *Ophiothrix* contains statements that are remarkable in another sense.

Turning to *Pelmatozoa*, we find an admirable introduction to the anatomy of *Antedon* by CUÉNOT. This however is so specialised a form that the student may be glad of the description of a simple stalked Crinoid offered by BATHER (19), who also discusses the chief modifications to which that type is subject, and in the course of his systematic account introduces many new facts. A long-standing controversy as to the presence of pores in the anal tube of fistulate Crinoids has at last been settled, so far as certain *Dendrocrinoidea* are concerned, by the detailed figures and descriptions of SPRINGER (314). The same author (315) announces discoveries concerning *Uintacrinus* for which the evidence will be given in a detailed memoir (Aug. 1901). From investigation, by numerous refined methods, of the histology of the soft tissues connecting the brachials of *Antedon*, BOSSHARD (44) concludes that the dorsal fibre-masses are not muscular, as supposed by some recent writers, but purely elastic, and in continuity with the general stroma; the interarticular ligament is of the same nature, but more compact, and opposes the pull of the ventral muscles partly by contraction from extension, partly by resistance to compression, according as it lies dorsad or ventrad to the fulcral ridge; the cirri, though united only by fibres similar to the dorsal ligament of the arms, are capable of spontaneous though sluggish movements, a fact admittedly inconsistent with the ascription of a purely elastic nature to the fibres. The paper begins with a useful summary of our present knowledge of *Antedon's* anatomy, gives a better description of the syzygy (pp. 78-81) applied according to the proposal of (21) Zool. Rec. 1897, but repeats the old confusion between dorso-central and centro-dorsal (p. 74).

RUSO (292) claims to have observed the rudiment of the sexual cells in *Antedon* near the wall of the posterior interradius, far away from the rudiment of the axial organ, but in connection with a special sinus and lacuna. He homologises this with the arrangement in adult holothurians, and believes it to represent the Cystid stage of organisation. The relation of this embryonic rudiment to the gonads of adult crinoids is, however, not clear. Here it is convenient to mention a physiological observation of the same writer (293). He claims that the genital organs of Holothurians [strictly of 3 spp. of *Holothuria*], when the gonads are not mature, not merely excrete the katabolic products of other tissues, but are themselves a centre of renal activity. If this be more than a particular statement of the general fact that the amoeboid cells of Echinoderms carry effete products through the walls of all the organs [cf. CUÉNOT (75) under II, c, v], then it may be regarded as confirming the homology of the Holothurian gonoduct on the one hand with the primitive nephridial pore of the anterior coelom in the *Dipleurula*, and on the other hand with the axial organ of other Echinoderms, to which organ a renal function has been assigned by KOWALEWSKY and the SARASINS. RUSSO, however, denies any connection between the gonads and the axial organ of Echinoderms.

The accounts of *Cystidea*, *Edrioasteroidea*, and *Blastoidea* in BATHER (19) are almost entirely the result of original research, and are full of new observations. A detailed redescription of *Edrioaster buchianus*, BATHER (20) gives some of the facts on which the conclusions of the Treatise (19) as to the relations of the Class are based. The extra plate noticed by ROWLEY (291) in the anal interradius of a *Pentremites elongatus*, throws light on the similar but larger structure in *Nucleocrinus*. The structures figured by SCHLUETER (298) as arms of *Lodunella* are, if arms at all, those of a Crinoid not of a Cystid; the structure of the stereom resembles that of *Craterina*.

Under the head of Variation many observations of much interest are recorded. Study of the variations in *Agaricocrinus* emboldens Miss KLEM (173) to reduce the 42 described species to 10; her account of the development is, however, vitiated by incorrect homologies, and it is not clear how much is only *a priori* speculation; work of this kind would be most valuable if conducted on strict biometric lines. From a study of many specimens of the starfish *Pycnopodia helianthoides*, RITTER & CROCKER (283) prove that the sixth ray lies in the plane of the larval organ, between rays I and II of Ludwig, and that extra rays up to a total of twenty are added adjacent to I and II on the side next the sixth ray, a bilateral symmetry of skeletal and internal structures being thus maintained; they believe that the process of budding is initiated by the water ring, the points of budding corresponding to the ends of the curved larval hydrocoel, that the multiplication of the rays is merely a continuation of the process that gives rise to the original five, that the bilateral symmetry of the adult is a continuation of that of the larva, and that the sixth ray is intimately related to the larval organ. Concerning the relations of adult to larval symmetry the views of GOTO, GRAVE (135), and MACBRIDE (214) may be compared.

C. Most of the Physiological observations recorded are of interest rather to the general biologist than to the specialist on Echinoderms; such as affect the latter have already been alluded to. UEXKUELL (333) continues his elaborate researches into the nervous reactions of Echinoids. Heliotropism in Crinoids and Blastoids can scarcely have the effect suggested by KLEM (173) owing to the diffusion, if not the complete obscuration, of daylight at the depths inhabited by those animals.

D. The classification, under the several divisions headed Bionomics, of scattered observations that would otherwise escape notice is probably no less valuable than interesting. MEAD's proof (228) that the extent and rapidity of growth in the young starfish simply depends on the amount of food it can get, and that sexual maturity comes when a certain size is reached, independently of age, carries important biological and practical consequences. He also shows that, given sufficient food, the extra work entailed by the reparation of an injury does not affect the rate of growth. HUBRECHT (165) and HORST (161) contend that in *Linckia* a single arm can regenerate the whole animal. This however conflicts with the experiments of MEAD and also of Miss KING (171) on regeneration in *Asterias vulgaris*. In nature, say both these authors, an injured arm is thrown off and replaced by a fresh one; but a mutilated arm, if protected, can replace its missing portion, cannot however reproduce a disc. The disc, says Miss KING, can reproduce all arms; from an interradial cut in the disc one or more arms may grow out, thus accounting for most (? all) cases of hyperactiny; 2 rays and portion of disc minus madreporite reproduce madreporite in no fixed position; but when the authoress says that this "shows conclusively that the position of the madreporite is a variable one and does not depend on some polarity in the disc," she probably does not intend to enunciate a morphological maxim. Ingenious mutilations of the rays are repaired, and since such accidents do not occur in nature "the capacity for regeneration

is not a phenomenon of adaptation." To judge from the descriptions of the mutilations and from the diagrams, the present paper treats a starfish as though it had an almost homogeneous structure; except in one experiment where the digestive caeca were removed, we are never told the relation of the cuts or the new growths to the internal anatomy; precise experiment and microscopic observation are much needed.

The heading of section x has been altered to "Echinoderms as Geological Agents" in order to include other functions than the passive one of rock-forming. The rock described by DEECKE (84) as an "Echinoderm-breccie" is really an Eocene conglomerate derived from the degradation of the immediately preceding Saltholm Limestone; the occurrence of the Echinoderm remains in continuous beds several centimetres thick is probably due to the sifting action of currents.

F. The most important embryological work of the year is that of GRAVE (135) on *Ophiura brevispina*, the species called *O. olivacea* in his otherwise discrepant preliminary account (110) Zool. Rec. 1899. Misfortune, however, seems to have attended his labours from first to last; not only was his memoir originally issued in such a form as to be unintelligible, but even as corrected by him there are errors in both text and plates, and, what is of more importance, his somewhat startling conclusions are based on a series of observations often separated by wide intervals, some critical stages not having been preserved. He infers from the appearances at 36 hours that the gastrula was formed by delamination from a planula. At 42 hours he finds the hydrocoel rudiment springing directly from the archenteron, and not connected with either anterior or posterior enterocoels; a pouch identified as left posterior (or hypogastric) enterocoel is constricted off from the archenteron, leaving the stomach, while the epigastric enterocoel is not seen till 48 hours and is then supposed to be the right anterior enterocoel, which has otherwise vanished. [In other echinoderms that cavity merges with the left anterior enterocoel while the epigastric or aboral coelom is derived from a distinct right posterior enterocoel.] At this stage the stone-canal connects hydrocoel and left anterior enterocoel, although the dorsal pore-canal has not been formed. Twelve hours at a most critical period are now unrepresented, and the appearances presented at 60 hours are explained by GRAVE as due to the rotation of the hydrocoel and all its 5 lobes through 180°, the first-formed lobe (No. 1 of GRAVE) having already passed through 180° from its point of origin, making "a total rotation of 360°." In other words, whereas at 48 hours lobe 3 of the hydrocoel pointed to the anterior end of the larva (or North) and the opening of the stone-canal in lobe 5 was S.S.E., now it is supposed that lobe 3 points to the posterior end or S., while the stone-canal is almost N.N.W. and between 5 and 1. In this interradius also lies the [left ?] anterior enterocoel, which partly fuses with extensions from the hypogastric enterocoel to form the outer periaemal ring, and partly sends out an additional projection to form the inner periaemal ring, while a third portion remains as the rudiment of the axial sinus (ampulla) and is already connected, by a canal, with a pore at first on the aboral surface but at a much later stage migrating to the oral surface. If this interpretation be correct, then all the asymmetrical structures of the adult lie in the interradius 5-1, which marks the closure of the water-ring; and this also is directed towards the anterior end of the larva, identified by GRAVE with the preoral lobe, while radius 3 points to that spot on the larva originally marked by the blastopore. Hence the plane of bilateral symmetry of the adult has, owing to an alleged enormous rotation of the hydrocoel, come to coincide with that of the larva. A similar coincidence [not preceded by a similar rotation] occurs in *Asterias pallida* according to GOTO. But in *Asterina gibbosa* both GOTO and MACBRIDE place the stone-canal, axial sinus, &c. in the interradius 1-2 of



GRAVE, while the preoral lobe and union of the water-ring are in 5-1; since GRAVE has not seen the closure of the hydrocoel, it is possible that his identification of the radii is incorrect, especially as the torsion is in a contrary direction to the torsion of oral and aboral systems in *Asterina*. The many interesting speculations suggested by Dr GRAVE's inferences will be more ripe for discussion when he shall have supplied information as to the missing stages and a more detailed series of sections throughout.

Not much serious study of post-larval growth-stages was accomplished during the year, but BEDFORD (25) did what he could with insufficient material. The results of LAMBERT, MEAD, KLEM, and RITTER & CROCKER have already been noticed. A large amount of work intensely interesting to the biologist has been turned out by the experimental embryologists; but of this a sufficient account is given under II, F, viii.

III. A. Under Geographical Distribution, in which bathymetric as well as horizontal extension is included, the chief additions to knowledge are from the Antarctic and Indian Oceans, being specially connected with the voyages of ss. 'Belgica,' 'Valdivia,' and H.M.S. 'Investigator.' The rediscovery of what appears to be *Astrophisura*, though not determined as such, is an event of importance. Valuable studies on Arctic Echinoderms are numerous, but produce no startling novelty. A good deal of faunistic work has also been done in the West Indies. R. PERRIER (263, 264) describes several new genera and species of Holothurians dredged by the 'Travailleur' and 'Talisman' without giving the localities where they were found [have the labels been lost?].

III. B. Out of the mass of notes concerning fossil forms we may select for mention: the writings of FOURTAU on Egyptian Tertiary and Cretaceous *Echinoidea*, especially No. 115, in which he is assisted by GAUTHIER; OPPENHEIM's description of the fauna of the Priabona beds (251); FICHEUR (108, 109) on Algerian Cretaceous *Echinoidea*; LISSAJOUS' (19) list of Mesozoic Echinoderms near Mâcon; LAMBERT on Echinoids in the Vesulian of Indre (186) and the Lias and Infra-Lias of l'Yonne (187); ROWLEY (289-291) on Crinoids and Blastoids from the Lower Carboniferous rocks of Missouri; STUART (325) on Lower Devonian Asteroids from Bundenbach; WELLER's description (348) of a Crinoid fauna from the Niagaran of Chicago resembling that from N.W. Europe. The distribution of Echinoderms in the Chalk of S.E. England is carefully studied by DIBLEY (92) and ROWE (288), while valuable faunal lists of the Lower Cretaceous and Jurassic of the French Alps are published by KILIAN & LORY (170). BOEHM (41) records a Blastoid from Timor; FRECH (124) one from Persia. The list of Miocene *Antedonidae*, so recently increased by NICOLAS and P. DE LORIOU, is added to by NOELLI (243), who describes several cups and centrodorsals from Piedmont.

An attempt has been made to shorten both sections of Part III by quoting, as a rule, the generic names alone; reference to these in the Systematic Part, IV, will however show what are the species dealt with in each case.

IV. Continuing the idea just mentioned, it is generally possible to discover all the species discussed in any paper, by turning first to the reference under III, noting the genera, and then turning them up in IV. Thus, under NOELLI (243) is a reference III, B, ii, d; turning to this, one learns that the paper deals with "spp. of *Pentacr.*, *Conocr.*, *Antedon*, and *Actinometra*"; looking up these genera under IV, F, one finds all the species in alphabetical order. To a less extent the same plan may be followed with the references to II. When no clue to the species is obtainable in this way, the names of the genera have been inserted after the title, and the same course has been followed when it is advisable to direct attention to an entry not otherwise indicated; see, for instance, ACLOQUE (1). Conversely, when a generic or specific name is entered under IV



without remark, reference to the sections of Part II or III, as indicated after the Title, will generally show the nature of the quotation. Thus, it is easy to understand that the numerous names quoted from GREGORY in BATHER (19) are those of genera whose systematic position is discussed, changed, or merely fixed by that author's new classification.

The works that deal with the wider questions of taxonomy have already been alluded to under II, A, in connection with phylogeny, while those descriptive of recent or fossil faunas have been mentioned under III. A number of new species of all Classes are mentioned in CHUN; none are adequately described, but several are illustrated, and to some of the figures names are attached. If these are to rank as new species, such a mode of publication deserves censure. Part VIII of P. DE LORIOI's *Notes pour servir* (207) discusses 16 species of *Echinoidea*, *Asteroidea*, *Ophiuroidea*, and *Crinoidea*, both Mesozoic and Recent, 11 being new, with 2 new genera of Echinoids; the curious phrase "localité certaine" applied to the source of *Antedon doederleini* suggests that the localities of the other species are uncertain. Among *Holothurioidea* new species are described by R. PERRIER (263, 264) who does not condescend to give illustrations any more than localities. SPANDEL (313) describes spicules of *Synapta* from the Oligocene, and claims that they are the first true Synaptid remains found fossil. Several new fossil *Echinoidea* are made known by GAUTHIER in FOURTAU (115), but since the date of this paper is 1900 and each new species is introduced as "Gauthier 1899," it is not easy to tell what is new and what is not, especially as there is nothing to distinguish the contributions of GAUTHIER from those of FOURTAU. Many new genera and species are established by LAMBERT (186, 187) and here it is even more difficult to discover the novelties; but since the latter paper is full of misprints it seems possible that the erudite author was not given the chance of correcting his proofs; his own kind help has enabled the present Recorder to remove some obscurities. Another valuable paper, marked by care and learning, is that of SCHLUETER (299) on species of *Brissopsis*, *Diplodetus* [n. g.], *Plesiaster*, and *Cardiaster*. It would be a great boon to the weaker brethren if these eminent palaeontologists would remember that all have not so intimate an acquaintance with the profundities of Echinoid nomenclature as to recognise a new name the moment it is printed: it is so much easier for the author of a new genus or species to affix the sign n. g. or n. sp., than for an over-worked Recorder. Other fossil Echinoids are described by FICHEUR (109), ARTHABER (124), OPPENHEIM (251), and SIMIONESCU (306), the last paper being here recorded thanks to the generosity of its author. A few new species are among the Malayan *Echinoidea* and *Asteroidea* described by BEDFORD (25). The *Echinoidea* and *Ophiuroidea* of the 'Belgica' are described, but not yet figured, by KOEHLER (180). STUERTZ (325) with his usual skill has worked out some more of the wonderful Bundenbach starfish, but has been unfortunate in his new names. VERRILL's revision of *Ophiuroidea* (341) has already been noticed: here again one finds old names said to be new, new names not said to be anything, names so confusing as *Ophictodia* and *Ophientodia* with which even their own author seems to have struggled in vain, genera or subgenera (one is rarely clear which) sometimes with one species nominated as type, sometimes with another, sometimes with both: small wonder if the Recorder mutters "Reviser, revise thyself!". PERNER (261) following JAEKEL, has revised the nomenclature of Barrande's *Cystidea* of Bohemia, while a somewhat similar task has been performed for the *Crinoidea* by BATHER (21). Several species of *Agaricocrinus* have been revised and reduced by KLEM (173). Other fossil crinoids are described by BEEDE (28), NOELLI (243), OPPENHEIM (251), ROWLEY (289-291), WELLER (348), and SOLLAS (312). *Ciceroocrinus* of the last author was almost synchronously described by Jaekel as *Lagarocrinus*. Finally, under the curious name

*Paropsonema* [Aesch. Agamemnon, 1447] CLARKE (68) describes an even more curious fossil.

The additions to our systematic lists may be analysed thus :—

|                | New genera | Altered generic names | New sub-genera | New species | New varieties |
|----------------|------------|-----------------------|----------------|-------------|---------------|
| Holothurioidea | 1          | 1                     | 0              | 11          | 2             |
| Echinoidea     | 11         | 1                     | 1              | 68          | 5             |
| Asteroidea     | 10         | 0                     | 0              | 13          | 3             |
| Ophiuroidea    | 7          | 2                     | 1              | 16          | 0             |
| Crinoidea      | 4          | 0                     | 0              | 51          | 0             |
| Cystidea       | 0          | 0                     | 0              | 2           | 0             |
| Blastoidea     | 0          | 0                     | 0              | 6           | 0             |
| Incertae Sedis | 1          | 0                     | 0              | 1           | 0             |
| Total          | 34         | 4                     | 2              | 168         | 10            |

These numbers are given with the usual reservation necessitated by the obscurity of authors; several of the names are known to be synonyms. All the generic names ever used for *Pelmatozoa*, perhaps also for *Ophiuroidea*, are believed to occur in this year's Index, which has thus a special value.

#### CORRIGENDA in previous Records.

Record for 1893, vol. xxx :—

- p. 11. "73. EFISIO, M. Saggio etc." should be "73. MARCIALIS, EFISIO. Saggio etc."

Record for 1897, vol. xxxiv :—

- p. 10. No. 61. p. 193 should be p. 192.  
 p. 17. No. 130. pl. xxxiv should be pl. xxxv.  
 p. 32. No. 306. p. 261 should be p. 254.  
 p. 62. line 4. replace the paragraph by,—*Sigmodota* Studer, genotype *S. purpurea*, revived for all spp. of *Chiridota* with sigmoid spicules; ÖSTERGREN (255) Zool. Anz. xx, p. 154, footnote.

Record for 1899, vol. xxxvi :—

- p. 9. No. 1. [III, D, iii] should be [II, D, iii].  
 No. 4. Add date (18 Aug.).  
 p. 10. No. 14. Add date (15 Apr.).  
 p. 12. No. 55. Reference should read "12th Ann. L. M. B. C. Rep. (Dec. 1898, reissued in) Tr. Liverp. Biol. Soc. xiii, pp. 23-27 (Sept. 1899)."  
 p. 13. No. 64. See No. 74 of this Record.  
 p. 19. "HOLZAPFEL, E. See STOLLEY, E." add "and KAYSER (132)."  
 Between lines 11 and 12 from bottom, insert "JAHN, J. J. See WAAGEN & JAHN (246)."  
 p. 20. line 3. dele "& HOLZAPFEL, E."  
 p. 25. No. 179. Reference should read "fasc. 1, pp. 52-62 (15 Apr.), pl. ii (issued with fasc. ii, 18 Aug.)."  
 p. 30. No. 236 and p. 31 No. 245. Add date (15 Feb. 1900).  
 p. 55. *Periamna* should be *Periamma*.  
 p. 57. *Astrodapsis*. Insert [melius *Astrodapsis*].  
 p. 94. *Caryocystis minutus*. Insert [err. pro *munitus*].

The Recorder is always glad to receive corrections, and is specially grateful when Authors, Editors, or Publishers enable him to remove the asterisk indicating that a work has not been seen.

## I. TITLES.\*

1. ACLOQUE, A. Faune de France.....Thysanoures, Myriopodes, Arachnides, Crustacés, Nématelminthes, Lophostomés, Vers, Mollusques, Polypes, Spongiaires, Protozoaires. 18mo, 500 pp., 1664 text-figg. Paris: Baillière (1898, dated 1899).  
[III, A, ii. IV, A, E, *Ophioderma*.]  
Échinodermes, pp. 454-466.
2. \* —. Le monde sous-marin. 8vo, 318 pp., 326 text-figg. Abbeville: Paillart (1899). [II, D, i.]  
Review: by C. DE KIRWAN, Rev. Quest. Sci. (2) xvii, pp. 575-588 (April, 1900.)
- AIRAGHI, C. (4) Zool. Rec. 1899. Abstract: Boll. Com. geol. Ital. xxxi, pp. 89, 90.
3. —. Di alcuni Conoclepeidi. Boll. Soc. geol. Ital. xix, pp. 173-178, pl. i. (31 May.) [III, B, ii, d. IV, c.]  
Abstracts: by J. LAMBERT, Rev. paleozool. iv, pp. 178, 179 (Oct. 1900); by V[INASSA DE REGNY], Riv. ital. Pal. vi, p. 109 (Sept. 1900).
4. —. Echinidi postpliocenici di Monteleone Calabro. Atti Mus. Milano xxxix, pp. 65-74. (June.) [III, B, ii, b. IV, c.]  
Abstracts: by J. LAMBERT, Rev. paleozool. iv, p. 179 (Oct. 1900); by P. E. VINASSA DE REGNY, Riv. ital. Pal. vi, p. 109 (Sept. 1900).
5. —. Dell' *Echinolampas laurillardii* Agas. e Des. Riv. ital. Pal. v, pp. 109-111. (31 Dec. 1899, received in London 17 Feb. 1900.) [III, B, ii, e. IV, c.]  
Abstract: by J. LAMBERT, Rev. paleozool. iv, p. 136 (July 1900).
- ALBRECHT, E. (7) Zool. Rec. 1899. Abstract by O. BÜTSCHLI, Zool. Centrbl. vii, pp. 680, 681 (9 Oct. 1900).
- ALCOCK, A. See KOEHLER (179).
6. ALESSANDRI, G. DE. Sopra alcuni fossili Aquitaniani dei dintorni di Acqui. Boll. Soc. geol. Ital. xix, pp. 549-554. (20 Dec.) [III, B, ii, d.]
7. ALLEN, E. J. & TODD, R. A. The Fauna of Salcombe Estuary. J. Mar. Biol. Ass. (n. s.) vi, pp. 151-217, 1 map. (Nov.) [II, D, iii, a; vi; viii, c. III, A, ii.]
8. ALMERA, J. Compte-rendu de l'excursion.....à Montcada et à Sardanyola. Bull. Soc. geol. France (3) xxvi, pp. 732-741. (Dec. 1899.) [III, B, iv, h.]
9. —. Compte-rendu des excursions...à Gracia et le Coll (Horta) et...à Vallcarca, au Tibidabo et à Esplugas. Bull. Soc. geol. France (3) xxvi, pp. 742-763. (Dec. 1899.) [III, B, ii, c; iv, f, h.]
10. A[MI], H. M. British American Echinoderms. Ottawa Natural. xiv, p. 56. (6 June.) [III, A, ii.]

\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Paper or Work referred to.

The Symbols in [ ] refer to the divisions of the Subject-Index, II, III, IV. Those referring to the Systematic portion [IV, A-K] are inserted only when some question of definite importance to the systematist is dealt with in the work. The names of the genera mentioned in any work can generally be gathered from the lists given under Distribution [III, A or B], and the species can then be traced by turning to Section IV. Only where this was not possible have names been inserted after the title.

11. ANDERSON, A. R. S. Report of the Surgeon Naturalist for the season 1898-99. Rep. Marine Surv. India, 1898-1899, pp. 5-16. (1899.) [II, B, i, c, 8; ii, c: D, iii, c; v, a. III, A, iii. IV, c.]
12. ANDERSSON, J. G. Ueber die Stratigraphie und Tektonik der Bären Insel. Bull. Geol. Inst. Upsala, iv, part 2, pp. 243-280, ii pls. [III, B, iii, e.]
13. ANDREWS, C. W. et alii. On the marine fauna of Christmas Island (Indian Ocean). P. Zool. Soc. London, 1900, pp. 115-141, pls. xii, xiii. I. Introductory note by C. W. ANDREWS, pp. 115-117. (1 June.) [II, D, iii, c. III, A, iii.]  
*Echinoderma* determined by F. J. BELL, p. 116.
14. A[NDREWS], E. A. Merogeny. Amer. Natural. xxxiv, pp. 980-982. (Dec.) [II, F, viii.]  
 A Review of Y. DELAGE (43) Zool. Rec. 1898, and (67) Zool. Rec. 1899.  
 —. See also CONANT (71), GEMMILL (125), HAMMAR (149), HERBST (156).
15. ANDRUSOV, N. J. Ueber *Ephippiellum symmetricum* Jar. Lomnicki. SB. Ges. Dorpat, xii, pp. 248, 249. (July.) [III, B, ii, d. IV, E.]
16. ANGELIS D'OSSAT, G. DE & MILLOSEVICH, F. Seconda spedizione Böttego (1895-97). Studio Geologico sul materiale raccolto da M. SACCHI, 8vo, x+212 pp., iv pls., i col. map, frontsp., text-figg. Società Geografica, Roma. [III, B, iii, c, I.]  
 "Fossili dell' Harrar" is by ANGELIS D'OSSAT alone.  
 —. See also VERRI (339).
- ANTHULA, D. J. (18) Zool. Rec. 1899. Abstract by V. UHLIG, N. Jahrb. Min. 1901, i, pp. 470-474— (June 1901). Review by J. LAMBERT, Rev. paleozool. v, p. 41 (Jan. 1901).
17. APOSTOLIDÉS, N. C. L'Ophiure. In BOUTAN, L. and others. Zoologie descriptive &c., vol. i, pp. 300-326 (dated 1900, but publ. June, 1899). [II, B, i, e, I, 5-12: c, iii: D, iii, e; vi: F, ii. IV, A.]
- ARNAUD, H. (10) Zool. Rec. 1896. Abstract by A. TORNQUIST, N. Jahrb. Min. 1900, ii, p. 486— (Dec. 1900.)
- ARTHABER, G. v. See FRECH (124).
- BARROIS, C. See LAMBERT (186).
18. BATAILLON, E. La segmentation parthénogénétique expérimentale chez les Amphibiens et les Poissons. C.R. Ac. Sci. cxxxi, pp. 115-118. (July.) [II, F, viii.]  
 Abstract: by C. F., Rivista Biol. general. iii, p. 139 (Feb. 1901).
- BATHER, F. A. (11) Zool. Rec. 1893. See JAEKEL (167).—(25) Zool. Rec. 1897. Abstract: Feuille Natural. xxxi, p. 69 (1 Dec. 1900).—(26) Zool. Rec. 1899. Review by O. JAEKEL, N. Jahrb. Min. 1900, ii, p. 485— (Dec. 1900).
19. —. A treatise on Zoology edited by E. RAY LANKESTER. Part III, The Echinoderma by F. A. BATHER, assisted by J. W. GREGORY & E. S. GOODRICH. 8vo, viii+344 pp., 309 text-figg., London: Black. (March.) [II, A, ii, iii: B, i, a, 1-12; b, 1-12; c, 1-7; d, 1-3, 5, 6; e, 1, 3, 5-7; f, 1-3, 5-10; g, 1, 4-8, 11; h, 1, 5, 6: E, iii, iv. iv, A-H.]  
 Reviews: Athenaeum (5 May, 1900); Geol. Mag. (n. s.), dec. 4, vol. vii, pp. 233, 234 (May, 1900); Ann. Scott. Nat. Hist. 1900, p. 191 (July); Zoologist, iv, p. 242 (15 May, 1900); Amer. Natural. xxxiv, pp. 675, 676 (Aug. 1900); by R. F. S[CHARFF], Irish Natural. ix, pp. 118, 119 (May 1900); by W. P. PYCRAFT, Ann.



- Nat. Hist. (7) vi, pp. 341-343 (Sept. 1900); by J. LAMBERT, Rev. paleozool. iv, pp. 130, 131 (July 1900) and pp. 171-173 (Oct. 1900); by E. A. M[INCHIN], Nature, lxii, pp. 545, 546 (4 Oct. 1900).  
Abstract: by H. LUDWIG, Zool. Centrbl. viii, pp. 387-390 (2 July, 1901).
20. [BATHER, F. A.] Studies in Edrioasteroidea. II. *Edrioaster buchianus* Forbes sp. Geol. Mag. (n. s.), dec. iv, vol. vii, pp. 193-204, pls. viii-x, 7 text-figg. (May.) [II, B, i, g, 5-8, 11.]  
Abstract: by C. V. C[ROOK], Geol. Centrbl. i, pp. 59, 60 (15 Jan. 1901).
21. —. The Lower Palæozoic Crinoids of Bohemia. Ann. Nat. Hist. (7), vi, pp. 102-121, 7 text-figg. (July.) [II, B, i, f, 5. III, B, iv, a. IV, F.]  
A review of WAAGEN & JAHN (246) Zool. Rec. 1899.  
Abstract: by J. LAMBERT, Rev. paleozool. iv, p. 175 (Oct. 1900).
22. —. Pores in the ventral sac of fistulate Crinoids. Amer. Geol. xxvi, pp. 307-312. (Nov.) [II, B, i, f, 5.]  
A reply to SPRINGER, F. (314).  
Abstract: by T. W. STANTON, Geol. Centrbl. i, p. 413 (1 July, 1901).
- See also WELLER (348), ZITTEL (369).
23. BAUMBERGER, E. & MOULIN, H. La série néocomienne à Valangin. Bull. Soc. Neuchatel, xxvi, pp. 150-210, 2 pls., 6 text-figg. (1898, received in London, March 1900.) [III, B, iii, b, 2.]
24. BEAUMONT, W. I. The fauna and flora of Valencia harbour on the west coast of Ireland. Part II. The Benthos. VII. Report on the results of dredging and Shore-collecting. P. Irish Ac. v, pp. 754-798, chart ii. (June.) [II, D, ii; iii, a, d. III, A, ii.]  
†BEDFORD, F. P. (29) Zool. Rec. 1899. Abstract by H. LUDWIG, Zool. Centrbl. vii, p. 436 (26 June, 1900).
25. —. On Echinoderms from Singapore and Malacca. P. Zool. Soc. London, 1900, pp. 271-299, pls. xxi-xxiv, text-figg. (1 Aug.) [II, B, i, c, 7, 8, 9; ii, b, c: D, iii, c; iv; vii; viii, d; ix: F, vii, c. III, A, i, iii. IV, c, D.]  
Prelim. Abstr.: Zool. Anz. xxxiii, p. 231 (23 April, 1900).
26. BEECHER, C. E. Conrad's Types of Syrian fossils. Amer. J. Sci. (4), ix, pp. 176-178. (March.) [II, E, i, c.]
27. —. On a large slab of *Uintacrinus* from Kansas. Amer. J. Sci. (4), ix, pp. 267, 268, pls. iii, iv. (April.) [II, E, i, c: F, vii, f. III, B, iii, b, I.]  
— See SMITH, G. O. (310).
28. BEEDE, J. W. Two new Crinoids from the Kansas Carboniferous. Kansas quart. (ser. A.), ix, pp. 21-24, and 25, 26 numbered as pl. v. (Jan.) [III, B, iv, d. IV, F.]  
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29. —. Carboniferous invertebrates. Being Part I of "Paleontology, Part II, Carboniferous and Cretaceous." Kansas Univ. geol. Surv. vi, pp. 1-189, pls. i-xxii, on pp. 189-232. [II, E, iv. III, B, iv, d. IV, c, F.]
- BELL, F. J. See ANDREWS, C. W. (13).
30. BENHAM, W. B. Zoological results of Trawling trials off the coast of Otago. Tr. N. Zealand Inst. xxxii, pp. 1-3. (June.) [III, A, iv.]

31. BENOIST, E. Note pour servir à l'étude de la géologie du Département de l'Indre. Étage Bathonien. Feuille Natural. xxxi, pp. 2-6, pl. i. (1 Nov.) [III, B, iii, c, 2, 3.]
32. BERGH, R. S. Vorlesungen über allgemeine embryologie. 8vo, x+290 pp., 126 text-figg. Wiesbaden: Kreidel (1895). [II, F, i; iv; vi, a, 7, 10; viii.]
33. —. Das Schicksal isolierter Furchungszellen. Zool. Centrbl. vii, pp. 1-14. (9 Jan.) [II, F, viii.]  
Summarises DRIESCH, Zool. Rec. 1891, (70) Zool. Rec. 1893, (52) Zool. Rec. 1898; FIEDLER, Zool. Rec. 1891; MORGAN (121) Zool. Rec. 1895; and ZOJA (358) Zool. Rec. 1897.  
— See also DRIESCH (96, 97), HERBST (156), KING, H. D. (and 171), LOEB (199, 201, 202), MORGAN (235), WINKLER (358).
34. BETTONI, A. Fossili domeriani della provincia di Brescia. Abh. Schweiz. pal. Ges. xxvii, Mem. 3, 88 pp., ix pls. (1900, received in London, 23 April, 1901.) [II, B, iii, d.]
- BEUSHAUSEN, L, see STUERTZ (325).
35. BIGOT, A. Feuille des Pieux. In 'Comptes rendus des Collaborateurs.' Bull. Carte geol. France, lxxiii, pp. 16-18. [III, B, iv, h.]
36. BLANCKENHORN, M. Neues zur Geologie und Paläontologie Aegyptens. i. Zeitschr. Deutsch. geol. Ges. lii, pp. 21-47, and following table. (July.) [III, B, iii, b, 1.]
37. —. Neues zur Geologie und Paläontologie Aegyptens. ii. Das Palaeogen. Zeitschr. Deutsch. geol. Ges. lii, pp. 403-479, 2 folding tables, 1 text-fig. (Dec.) [III, B, ii, e, f.]
38. —. Studien in der Kreideformation im südlichen und westlichen Siebenbürgen. Zeitschr. Deutsch. geol. Ges. lii, Protokoll pp. 23-37, 4 text-figg. (Dec.) [III, B, iii, b, 1.]
39. BLAYAC, J. Sur le Crétacé inférieur de la vallée de l'Oued Cherf (province de Constantine). C.R. Ac. Sci. cxxiii, pp. 958-960. (Dec. 1896.) [III, B, iii, b, 2.]
40. BLEICHER, — & MIEG, —. Sur un gisement callovien découvert aux environs de Winckel (Massif jurassique de Ferrette). Bull. Soc. geol. France (3), xxiv, pp. 805-807. (Feb. 1897.) [III, B, iii, c, 2.]
41. BOEHM, G. Reisenotizen aus Ost-Asien. Zeitschr. Deutsch. geol. Ges. lii, pp. 554-558. (Dec.) [III, B, iv, e.]
- BOEHM, J. See BOULE, M., BRUNHUBER (50), PETRACZEK (265), SIMIONESCU (306).
42. BONNEVIE, KRISTINE. "En eiendommelig ny molluskart der lever hos...*Stichopus tremulus*." Nyt Mag. Naturv. xxxvii, p. 355. [II, d, viii, b.]
43. BONNEY, T. G. The physical history of the Caucasus. Being Appendix A to "The Exploration of the Caucasus," by D. W. FRESHFIELD. Pp. 223-232, coloured map. London: Arnold (1896). [III, B, iii, d.]
- BORNHARDT, W. See WOLFF (360).
44. BOSSHARD, H. Zur Kenntnis der Verbindungsweise der Skelettstücke der Arme und Ranken von *Antedon rosacea* Linck (*Comatula mediterranea* Lam.). Jena. Zeitschr. (n. s.), xxxiv, pp. 65-112, pls. iii-viii. (1 Aug.) [II, B, i, f, 1, 5, 10; c, vii; e, i, b.]  
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- BOULE, M. (45) Zool. Rec. 1899. Abstract by J. BOEHM, N. Jahrb. Min. 1900, ii, p. -454- (Dec. 1900.)
45. BOURSAULT, H. Les Marnes intra-gypseuses dans les quartiers nord de Paris. Naturaliste, xix, pp. 221, 222. (1 Oct. 1897.)  
[III, B, ii, f.]
- BOUTAN, L. (Editor). Zoologie descriptive. Anatomie—Histologie et dissection des formes typiques d'Invertébrés. In II Vols. 8vo, vol. I, iv + 624 pp., vol. II, iv + 624 pp., numerous text-figg. Paris: Doin (1900). [Publ. June, 1899.] See APOSTOLIDÉS, N. C. (17) & CUÉNOT, L. (75).
46. BOVERI, T. Zellen-Studien. Ueber das Verhalten der chromatischen Kernsubstanz bei der Bildung der Richtungskörper und bei der Befruchtung. Jena. Zeitschr. xxiv, pp. 314-401, pls. xi-xiii. (26 Mar. 1890.)  
[II, F, viii.]  
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47. BRITISH MUSEUM (NATURAL HISTORY). Methods of collecting and preserving various Soft-bodied Invertebrate Animals. 8vo, 16 pp. London: sine anno [1900].  
[II, E, i, a.]
48. BROILI, F. Zur Fauna der Pachycardientuffe der Seiser Alp. Centrbl. Min. 1900, pp. 369-373. (30 Dec.)  
[III, B, iii, e.]
- BROOKS, W. K. See GRAVE, C. (135).
49. BROWNE, E. T. The fauna and flora of Valencia harbour on the west coast of Ireland. I. The Pelagic fauna (1895-98). P. Irish Ac. v, pp. 669-693. (June.)  
[II, F, v, d. III, A, ii.]
50. BRUNHUBER, —. Geologische Neuigkeiten. 1. Tertiär im Untergrund der bayerischen Zucker-Fabrik. 2. Hellkofener Kreidemergel. Ber. Ver. Regensburg, vii, pp. 120-128. [III, B, iii, b, 1.]  
Abstract: by J. BOEHM, N. Jahrb. Min. 1901, i, p. -446- (June, 1901).
51. BRYDONE, R. M. The Stratigraphy and Fauna of the Trimmingham Chalk. 8vo, 16 pp., ii pls. London: Dulau. (Oct.)  
[III, B, iii, b, 1.]
- BUETSCHLI, O. See ALBRECHT, E., WILSON, E. B.
52. BURBIDGE, W. H. Notes [Stalked larva of *Antedon*]. Sci. Gossip (n. s.), vii, pp. 215, 216, 3 text-figg. (Dec.)  
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53. BUSQUET, P. Les Êtres vivants—Organisation—Évolution. 8vo, 184 pp. Paris: Carré & Naud. (1899.)  
[II, B, i, a, 2.]
54. CAMPAGNA, F. Elenco di alcuni animali pelagici raccolti nel golfo di Palermo. Natural. Sicil. ii, pp. 177-181. (15 July, 1898.)  
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## II. BIOLOGY.

### (A.) EVOLUTION.

- i. **General Principles**:—Influence of sessile habitat:—partially sessile *Crin.*, *Ast.*, & *Hol.* (p. 7), influence on locomotor organs *Crin.* & *Hol.* (p. 29), absence of eyes in *Crin.* not an effect (p. 34), complexity of nervous system in *Crin.* (p. 41), food-collecting organs in *Crin.* (p. 48), *Hol.* (p. 49), *Oph.* (p. 51), invagination of oral tentacles in *Hol.* (p. 76), position of mouth and anus, *Crin.* (p. 82) and *Hol.* (p. 83), passage from sessile to free-moving, *Antedon* (p. 153); LANG (190): on development of *Antedon* (p. 801), and *Ast.* (pp. 875–878); HOUSSAY (163): Pentamerism of *Echinoderma* a direct consequence; CUNNINGHAM (76), p. 5.

- ii. **Relations of Echinoderma**:—to other *Coelomata*, esp. lower *Chordata*; BATHER (19) pp. 5, 8.
- iii. **Phylogenies of smaller groups**:—General interrelations of Classes of *Echinoderma*; BATHER (19) pp. 3-35, esp. 33, 35, also 39, 78, 95, 211, 217, and GREGORY, pp. 238, 325.—*Ast.* and *Oph.* derived from primitive *Ech.* which in turn was derived from *Hol.*, *Pelmatozoa* also derived from *Hol.*, the original source of all was a *Dipleurula*; CUENOT (74) p. 457.—Evolution of *Pelmatozoa* in general (p. 39), of *Cystidea* in general (pp. 39-43), of *Cystidean* Orders, Families, and genera (pp. 43-77), of *Blastoidea* in general (pp. 78-81), of their Grades, Series, Families and Genera (pp. 79-91), of *Crinoidea* in general (pp. 95-97, 141-143), of their Orders, Families, and Genera (pp. 144-201), of *Edrioasteroidea* and of their Families and Genera (pp. 205-211), of *Holothurioidea* by GOODRICH (p. 235), of *Brisingidae* (p. 259), of *Echinoidea* in general (pp. 325-328), of their Orders and Families (pp. 300-324), the last three items by GREGORY; BATHER (19).

Phylogeny of early Mesozoic *Ech.* with tree, and geol. distrib. and resultant classification (pp. 48 et sqq.); origin of *Cidaridae*, views of A. Tornquist and R. T. Jackson compared, *Cidaroida* possibly derived from *Bothriocidaritis* through *Eocidaritis* and *Permocidaritis*; ancestor of *Atelostomata* related to *Galeropygus* "jamais cet être bizarre avec ambulacres à assules uniporifères"; "mais, si l'on veut arriver à des connaissances précises sur l'évolution des Echinides, il faut observer la nature, étudier dans tous leurs détails les espèces fossiles et absolument renoncer aux transcendantes inductions qui ne peuvent conduire à rien" (p. 42); LAMBERT (187).—Slight change in reef-habiting echinoids of Jurassic as compared with those of the more exposed marly limestone deposits; LAMBERT (186), p. 474.

Phylogenetic position of *Ciceroer.* (syn. *Lagarocr.*):—a *Pisocrinid* (i.e. *Triacrinid*) that has developed arms something like *Ectenocr.*; SOLLAS (312): "the climax of the *Heterocrinidae*"; BATHER in discussion of SOLLAS (312): an advanced type of *Triacrinidae* that has reverted to *Heterocrinidae* in arm-structure; JAEKEL (168).

## (B.) MORPHOLOGY.

### i. Anatomy:—

#### a. ECHINODERMA.

1. General accounts:—Of living classes; PARKER & HASWELL (258) pp. 157-177; PERRIER (262) p. 244; SEGOVIA Y CORRALES (304).—General morphography, with special reference to features of phylogenetic and classificatory value; BATHER (19) pp. 3-35.—Fundamental morphology; HOUSSAY (163) pp. 53-56, figg. 20, 21.—Fundamental type; FLEISCHMANN (110), p. 72, fig. 26; HOUSSAY (163) p. 37, fig. 9.
2. Symmetries:—Origin of pentamerism (p. 11), the orientation of planes of bilateral symmetry (pp. 19-22); BATHER (19).—Radial symmetry, its relations to bilateral ancestor, and to larva; BUSQUET (53) p. 128.—Orientation and symmetry of external form; CUENOT (74) p. 438.—Suppressions of radiate symmetry, e.g. "the imperfect antimeres of [some] *Holothurians*, are spoken of as cases of 'dysmerogenesis'"; LANKESTER (191) p. 8.
3. Homologies of Classes:—As regards organs generally (Chapter VIII *passim*); as regards apical plates or 'calycinal system' (p. 14, and by GREGORY, pp. 246, 268, 294, 325); BATHER

- (19): CUENOT (74) p. 438.—Supposed homologies of calycinal system independently due to radiate structure of the Echinoderm; HAMANN (148) p. 802.
4. Skeletal tissue or Stereom:—BATHER (19) pp. 28, 29.
  5. Skeletal Anatomy:—BATHER (19) p. 14.—Endoskeleton illustrated by preparations of *Antedon rosacea*, *Solaster papposus*, *Ophiocoma erinaceus*, *Echinometra lucunter*, *Clypeaster humilis*, *C. rotundus*, *Holothuria nigra*; STEWART (318) pp. 12–14.
  6. Hydrocoel and associated cavities:—BATHER (19) pp. 7–11.
  7. Coelom and other Body-cavities, and their Contents:—BATHER (19) pp. 22, 25.—Coelom, its relations to the archenteron; LANKESTER (191) p. 16.—Lacunar system and sinus; CUENOT (74) p. 450.—Haemal system of *Echinoderma* “one and the same morphological entity” with blood-vascular system of other Coelomocoela [=Coelomata], i.e. not derived from the coelom; LANKESTER (191) p. 11.
  8. Digestive System, Cuvierian organs:—Vacant.
  9. Nervous Systems and sense-organs:—BATHER (19) pp. 30–32.—Of the classes compared; CUENOT (74) p. 440.—Sense-organs of *Hol.*, *Crin.*, *Oph.*, *Ech.*, esp. spheridia, with figures after Hamann and Loven, general account; DALMADY (78) pp. 52–54.
  10. Mesodermal tissues (exc. skeletal): BATHER (19) p. 27.
  11. Axial organ or Ovoid gland:—BATHER (19) p. 23: CUENOT (74) p. 450.
  12. Genital system:—BATHER (19) p. 24.—Development and homologies of, in the classes; CUENOT (74) p. 453.

b. *HOLOTHURIOIDEA*.

1. General Anatomy:—General morphology and relations (pp. 17–19), also description of a typical example and of variations therefrom, by GOODRICH (pp. 220–226); BATHER (19).—Morphology; HOUSSAY (163) pp. 138–141, figg. 92–94.—General account, with figures of *Psolus*, *Hypsilothuria*, *Rhopalodina*, &c.; PERRIER (262) p. 271.
2. Symmetries:—(p. 20) and by GOODRICH (p. 236); BATHER (19).
3. Homologies:—with *Pelmatozoa* (pp. 18, 19), as regards gonads (p. 24), also, as regards oesophageal skeleton, by GOODRICH (p. 224); BATHER (19).
4. Stereom:—Spicules (p. 29), and by GOODRICH (pp. 220, 223); BATHER (19).
5. Skeletal Anatomy:—Calcareous ring; GOODRICH in BATHER (19) pp. 220, 224; STEWART (318).
6. Hydrocoel &c:—Waternvascular system (p. 18), and by GOODRICH (pp. 221, 224); BATHER (19).
7. Coelom and other Body-cavities:—GOODRICH in BATHER (19) pp. 221, 223.
8. Digestive System:—Alimentary canal, Cuvierian organs, and respiratory trees; BATHER (19) pp. 18, 27, and by GOODRICH, p. 221.
9. Nervous System:—by GOODRICH (p. 221); otocysts (p. 32); BATHER (19).
10. Mesodermal tissues (exc. skeletal):—GOODRICH in BATHER (19) pp. 220, 223, 224.—Muscles of *Holothuria tubulosa*, dissection, and description thereof; STEWART (318) p. 90.

11. Axial organ:—its homologue; BATHER (19) p. 24.
12. Genital System:—(p. 24), & by GOODRICH, pp. 223, 225; BATHER (19).

c. *ECHINOIDEA*.

1. General Accounts:—General morphology and relations (pp. 15–17); also description of *Echinus esculentus* as typical *Ech.* and of variations therefrom by GREGORY (pp. 285–299): BATHER (19).—External and internal anatomy of *E. esculentus* as typical *Ech.*; CHADWICK (59): ditto, with good figures; CUÉNOT (75).—Morphology of *Ech.* with diagrams of integument, aboral pole, displacement of symmetry, jaw-apparatus, digestive tube, blood and water-vascular systems; HOUSSAY (163) pp. 121–130.—General account, with diagrams, general anat. and jaws; PERRIER (262) p. 262.
2. Symmetries:—BATHER (19) p. 21: HOUSSAY (163) pp. 123, 124.—Orientation and terminology of rays &c. in *Echinus*; CUÉNOT (75) p. 269.—Asymmetry of *Scutella excentrica* related to its habit of burrowing and its vertical position in sand; HARRINGTON (152).
3. Homologies with other Classes:—Generally (p. 33), as regards apical system (p. 14) and by GREGORY (pp. 294, 325); BATHER (19).
4. Stereom:—BATHER (19) (see II, B, i, a, 4).—Histology of spines, with special reference to fossils, classed according to the type of structure in *Cidaris*, *Echinus*, *Diadema*, *Clypeaster*, *Scutellidae*, *Spatangus*, descriptions of numerous spp.; HESSE (159).
5. Skeletal Anatomy:—Full general account; GREGORY in BATHER (19) pp. 285–289 & 293–298.—General description of skeleton of *Echinus esculentus*; CUÉNOT (75) p. 266, figg. 108–110, 112–115: CHADWICK (59) pp. 1–10, pls. i, ii.

Apical System:—of *Conoclypeus delanoueii*; FOURTAU (117) p. 53, fig. 1.—‘Dicyclic apex’ new term, when genitals and oculars form double ring around periproct; ‘monocyclic,’ when they form a single ring [not to be confused with the same terms as long since applied to the apical system of Echinoderms in a totally different sense] (p. 12, footnote); also ‘hemiolicycle,’ when some oculars are between the genitals, so as to form a ring and a half, derived from *ἡμιολος* [*sic*], and *κύκλος* [should be ‘hemioliocyclic’ from *ἡμιόλιος*] (p. 22, footnote); rudimentary suranal in young of *Palaeopedina globulus*, hitherto unknown among *Pedininae*, also tendency towards exocyclic anus (p. 25, & figg.): LAMBERT (187).

Coalescence of primary ambulacra, its cause and progress, studied in *Diademopsis*; LAMBERT (187) p. 8, text-figg.

Evolution of glyphostomate peristome; LAMBERT (187) p. 37.

Inconstancy of crenulations of spine-tubercles, value for classification; LAMBERT (187) p. 50.

6. Hydrocoel and associated cavities:—in general; GREGORY in BATHER (19) pp. 290, 291.—Of *Echinus*; CHADWICK (59) pp. 13–16, pls. iii, iv: CUÉNOT (75) p. 285, figg. 117, 122, 123.
7. Coelom and other Body-cavities, and their Contents:—GREGORY in BATHER (19) p. 292.—*Echinus esculentus*,—coelomic cavities (p. 284, figg. 116, 118, 127), lacunar system, Polian vesicles ‘vesicules spongieuses’ (p. 290, fig. 126); CUÉNOT (75): epineural canals (p. 18), pseudohaemal system and radial



- pseudhaemal canals (p. 19), haemal system, existence of radial haemal canals denied (pp. 19, 20), coelom generally (p. 20), corpuscles in fluid (p. 21); CHADWICK (59), pls. iii, iv.—Radial vessels separated from test by a mesentery in *Asthenosoma heteractis*; BEDFORD (25) p. 279.—Corpuscles of coelomic liquid of *Echinus*; CUÉNOT (75), p. 282, fig. 121.
8. Digestive System:—*Echinus esculentus*; CHADWICK (59) pp. 9–13, pls. iii–v; CUÉNOT (75) p. 278, fig. 119.—Balloon-shaped anal tube of *Diadema setosum* and *Echinothrix calamaris*; ANDERSON (11) p. 13.—2 additional loops of gut round top of jaw-apparatus in *Asthenosoma heteractis*; BEDFORD (25) p. 279.
  9. Nervous System:—Of *Echinus*; CHADWICK (59) p. 17, pls. iii, iv; CUÉNOT (75) p. 275, figg. 116–118.—Deeper ganglionated nerve-layer in radius of *Asthenosoma heteractis*; BEDFORD (25) p. 280 and text-fig.—Sphaeridia of *Echinus*; CHADWICK (59) p. 9, pl. ii.
  10. Mesodermal Tissues (exc. skeletal):—Muscles,—lantern of *Echinus esculentus*, section of *Asthenosoma hystrix*: description of the preparations (pp. 89, 90): Joints,—that allow of continuous growth, illustrated by test of *Echinus acutus* (p. 53): that allow of voluntary motion, illustrated by spine-attachment of *Heterocentrotus mammillatus* and *Phyllacanthus imperialis* (p. 56); STEWART (318).
  11. Axial Organ:—Of *Echinus*; CHADWICK (59) p. 20, pls. iii, iv: histology; CUÉNOT (75) p. 288, figg. 124, 125.
  12. Generative System:—Of *Echinus*; CHADWICK (59) p. 21: CUÉNOT (75) p. 294, figg. 127, 128.

d. *ASTEROIDEA*.

1. General Accounts:—with diagrams of general anatomy & ambulacral system; PERRIER (262) p. 252.—General morphology and relations (p. 13), and description of a typical example and of variations therefrom, by GREGORY (pp. 241–248); BATHER (19).—Morphology, with diagrams of general anatomy, and ambulacral grooves; HOUSSAY (163) pp. 130–132.
2. Symmetries:—BATHER (19) pp. 19–22.—Experiments on regeneration of *Asterias* held to prove that “position of the madreporite is a variable one and does not depend on some polarity in the disc”; KING (171) p. 732.—Symmetrical addition of rays in *Pycnopodia*, the plane of symmetry compared with that of the larva; RITTER & CROCKER (283).—(See also II, F, vii, d, 2.)
3. Homology:—With *Oph.*; GREGORY in BATHER (19) pp. 238, 259.
4. Vacant.
5. Skeleton:—General account; GREGORY in BATHER (19) pp. 241, 246, 249.
6. Hydrocoel and associated cavities:—GREGORY in BATHER (19) pp. 243, 247 [describes 5 Polian vesicles in *Asterias rubens*, though they are said to be absent from the genus].
- 7–12. Vacant.

e. *OPHIUROIDEA*.

1. General Accounts:—PERRIER (262) p. 260.—Description of a typical example and of variations therefrom; GREGORY in BATHER (19) pp. 262–273.—*Ophiothrix fragilis* descr. as typical *Oph.*; APOSTOLIDÉS (17).—Morphology; HOUSSAY (163) p. 132.

2. Vacant.
3. Homology :—With *Ast.*; GREGORY in BATHER (19) pp. 238, 262: ditto, as regards arm-skeleton; HAMANN (148) p. 794.
4. Vacant.
5. Skeletal system :—Full account; HAMANN (148) pp. 786–803.—General account; GREGORY in BATHER (19) pp. 262–264, 268–272.—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 303.—Terminology of elements of test; VERRILL (341) p. 302.

Alleged apical or calycinal system in *Oph.* shown to be a relatively recent development and not in ancient *Oph.* (*Ophioencrinasteriae*), fossil or recent *Ophiomyxidae* (*Streptophiuræ*), or *Euryalidae* (*Cladophiuræ*); STUERTZ (325) p. 181 et sqq.

Oral armature, peristomial plates said to be “between the mouth-frames and the buccal shields”; GREGORY in BATHER (19) p. 264; but MINCHIN in Review points out that it is the mouth-frames that are between the peristomial plates and the buccal shields.

Articular surfaces of arm-vertebrae considered as basis of classification, criticism of Bell and Gregory, impossibility of applying it to many fossil *Oph.*, detailed discussion of *Protaster*, *Bundenbachia*, and *Palastropecten*; STUERTZ (325) p. 177 et sqq.

Position of Madreporite in palaeozoic *Oph.*; STUERTZ (325) p. 192.

6. Hydrocoel &c. Respiratory organs :—GREGORY in BATHER (19) pp. 265, 272.—Water-vascular system, full account; HAMANN (148) pp. 819–826: of *Ophiothrix fragilis*, anat. and histol.; APOSTOLIDÉS (17) p. 308, figg. 132–139.—Respiratory organs, bursae; HAMANN (148) p. 828.
7. Coelom and other Body-cavities :—GREGORY in BATHER (19) p. 266.—Blood lacunar system, full account (pp. 836–844), pseudohaemal spaces, epineural canals, axial sinus and its branches (p. 844), coelom of disc and arms (p. 847), their contents (p. 848); HAMANN (148).—Vascular system of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 315, fig. 137.
8. Digestive System :—Of *Ophiothrix fragilis*, anatomy and histology; APOSTOLIDÉS (17) p. 305 et sqq., fig. 131.—Gut, peristomial spaces, and mesenteries; HAMANN (148) p. 826.
9. Nervous System :—Full account (pp. 806–819), innervation of spines (p. 786) and hooks (p. 789), epidermis (p. 783); HAMANN (148).—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 318, fig. 140.
10. Mesodermal tissues :—Integument (p. 785), muscles of body-wall (pp. 803–806); HAMANN (148).—Muscular tissue of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 305.
11. Axial Organ or Ovoid Gland :—HAMANN (148) pp. 841–844.—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 316, figg. 138, 139.
12. Generative Organs :—Full anatomical and histological account of; HAMANN (148) pp. 830–836.—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 320, figg. 141, 142.

#### f. CRINOIDEA.

1. General :—General morphology and relations (pp. 9–12, 94–97), description of a normal crinoid of simple structure (pp. 97–110) and of the chief modifications of structure (pp. 110–137); BATHER (19).—Morphology with diagrams of general structure, arms, and chambered organ; HOUSSAY (163) pp. 132–138.—General account with generalised section of *Antedon*; PERRIER

(262) p. 246.—Description of external and internal anatomy of *Antedon bifida* as typical *Crin.* with good figures; CUÉNOT (75).—General recapitulation of anat. of *Antedon*; BOSSHARD (44) pp. 65–71.—General account of structure, with special reference to Silurian forms; WELLER (348) pp. 23–37.

2. Symmetries :—General orientation (p. 110), symmetry of base (p. 123); BATHER (19).—Orientation and terminology of rays &c. in *Antedon*; CUÉNOT (75) p. 230.
3. Homologies :—Relations of *Crin.* to *Cyst.* and *Blast.*; BATHER (19) pp. 95–97.—Radials=terminals; CUÉNOT (75) p. 232.
4. Vacant.
5. Skeleton :—Account of simple type (p. 99 et sqq.) and of its chief modifications (p. 111 et sqq.); BATHER (19).—General account, *Antedon*, and special of arms and cirri; BOSSHARD (44) pp. 73–84.—General, *Antedon*; CUÉNOT (75) p. 232, figg. 87–90.—Criticism of terminology used by WAAGEN & JAHN; BATHER (21) p. 104.

Dorsal cup, dicyclic and monocyclic base, compound radials, supplementary plates; BATHER (19) pp. 99, 111, 117 et sqq.

Tegmen, and homologies of orals; BATHER (19) pp. 100, 124 et sqq.—Tegmen of *Scyphocr.*; BATHER (21) p. 119.—Tegmen of *Untacr. socialis* partly calcified, central anus, marginal mouth to which peripheral food-grooves lead from arm-rami, as in *Actinometra*; SPRINGER (315).

Anal plates; BATHER (19) p. 119.—Anal tube, pores between plates of: doubted; BATHER (19) p. 130: described and figd. for *Decadocr. tumidulus*, *Aulocr. agassizi*, *Scytalocr. validus*, *S. van hornei*, *Scaphiocr. unicus*, *S. arboreus*, *S. swallowi*, *Decadocr. grandis*, *Parisocr. subramosus*, and similarly placed slits in *Scaphiocr. missouriensis* and *Scytalocr. hoveyi*; SPRINGER (314): the statements accepted by BATHER (22), who, however, still criticises the attitude and figures of WACHSMUTH & SPRINGER'S Monograph (336) Zool. Rec. 1897.

Brachia,—modifications, terminology of brachials; BATHER (19) pp. 100, 112 et sqq.—Arm-branching in *Heterocrinidae* and *Triacrinidae* (= *Pisocrinidae*) compared, with reference to *Lagarocr.* (= *Cicerocr.*); JAEKEL (168): the same contrasted; BATHER in discussion on SOLLAS (312).—Fixed brachials and pinnulars of *Scyphocr.*; BATHER (21) p. 117, fig. 7.

Stem,—its origin, structure, and modifications, the law of Wachsmuth & Springer revised; BATHER (19) pp. 105, 132 et sqq.—Stem of *Scyphocr.*; BATHER (21) p. 119.—Origin of centrodorsal of *Antedon* traced to 3, 5, and 6 infrabasals, respectively, in Paleozoic *Crin.*; SARDESON (294).—“*Calpiocr. ? bohemicus*” considered as a root; BATHER (21) p. 112, fig. 6.

6. Hydrocoel &c.—Water-vascular system and its pores, generally; BATHER (19) pp. 102, 130: in *Antedon*; CUÉNOT (75) p. 250, figg. 99–102, 104, 105.
7. Coelom and body-cavities; contents :—coelomic and haemal spaces, axial canal; BATHER (19) pp. 103, 133.—Coelom of theca and arms of *Antedon*; CUÉNOT (75) p. 244, figg. 95, 96, 103.—Lacunar or haemal system,—spongy organ (p. 254, figg. 95, 101, 102); CUÉNOT (75).—The radial blood-vessels and their circum-oesophageal ring referred to the pseudohaemal (=perihæmal) system; BATHER (19) p. 102; but MINCHIN in Review claims that they belong to the lacunar or haemal system, since the pseudohaemal system of *Ast.* is coelomic in origin, and probably represented in *Crin.* by the subtentacular canals.

Globules, amoebocytes, &c. of *Antedon*; CUÉNOT (75) p. 243, fig. 93.

8. Digestive System :—BATHER (19) pp. 102, 136.—Of *Antedon bifida*, two ramifying caeca; CUÉNOT (75) p. 241, fig. 94.

9. Nervous System :—BATHER (19) pp. 103–106.—Of *Antedon* (p. 238, fig. 92), chambered organ (p. 247, fig. 97); CUÉNOT (75).—Axial ridges inside cup-plates of *Cyathocr. cora*; WELLER (348) p. 63.

Sense-organs of *Antedon*, tactile papillae, histology; CUÉNOT (75) p. 240, fig. 93.

10. Mesodermal tissues, &c. :—Modes of union between skeletal elements; BATHER (19) pp. 108, 116, 117.—Exhaustive enquiry into muscles, ligaments, and connective tissue of arms and cirri of *Antedon*; BOSSHARD (44) pp. 84–102.—Muscles of *Antedon*, distinguished as 'hyaline' and 'refrangent'; CUÉNOT (75) p. 236, fig. 91.

Sacculi; BATHER (19) p. 137: of *Antedon*; CUÉNOT (75) p. 237.

11. Axial Organ :—*Antedon*, histology, said to be "sans homologue chez les autres Echinodermes"; CUÉNOT (75) p. 249, fig. 98.

12. Generative System :—CUÉNOT (75) p. 255, figg. 103–105.—*Crin.* like *Hol.* are Monorchonia, the rudiments of the gonads unconnected with the axial organ, and in postr. interradius, as in *Cyst.*; RUSSO (292).

#### g. CYSTIDEA.

1. General morphology, relations, and lines of evolution of *Cystidea* (pp. 39–44), of *Edrioasteroidea* (pp. 205–211); BATHER (19).

- 2–3. Vacant.

4. Stereom :—Structure of test in *Cystidea* (p. 41, fig. i) in *Aristocystis* and *Calix* (p. 44, figg. iii, v); BATHER (19).

5. Skeleton :—Complete description of *Edrioaster buchianus*; BATHER (20).—'Hydrophores palmées' are epithecal food-grooves; BATHER (19) pp. 44, 46.

6. Hydrocoel &c. Respiratory organs :—Reconstruction of ambulacral structures in *Edrioaster* (p. 197, text-fig. 4), madreporite and water-ring (p. 198, text-fig. 6, pl. x); BATHER (20).—Extensions of hydrocoel in *Diploporita*; BATHER (19) p. 71.

Diplopores (pp. 41, 71), peculiar distribution of pectinirhombs in *Glyptocystidae* explained (p. 58, fig. xx); BATHER (19).

7. Dorsal mesentery in *Edrioaster*; BATHER (20) p. 199, text-fig. 6.

8. Course of gut in *Edrioaster*; BATHER (20) p. 199: in *Glyptocystidae*; BATHER (19) p. 58.

- 9–10. Vacant.

11. Chambered organ, *Edrioaster*; BATHER (20) p. 202, pls. viii–x.

#### h. BLASTOIDEA.

1. General morphology and evolution of structures, including *Protoblastoidea*; BATHER (19) pp. 78–91.

- 2–4. Vacant.

5. Skeleton :—Description and elucidation of the main points of skeletal structure in all genera; BATHER (19) pp. 80 et sqq.—Anal tube in *Schizoblastus sayi* (p. 247), probably in *Codonites?* *inopinatus* and *Granatocr. aplatatus*, anus and posterior spiracles not confluent in *G. aplatatus*, extra anal plate in a *Pentremites elongatus* (p. 248); ROWLEY (291).



6. Respiratory organs :—Hydrospires, origin and gradual elaboration ; BATHER (19) pp. 83 et sqq.

7-12. Vacant.

## ii. Variation :—

- a. In form :—Large size of Echinoderms in Arctic regions ; SCHAUDINN (296) p. 236.—In measurements of *Schizaster philippii* (p. 15), *Echinus magellanicus* (p. 10) and other spp. ; MEISSNER (229).—Variations of *Ananchytes sulcata* connected with locality [or horizon] ; GRÖNWALL (143) p. 68.—Due to environment, *Anorhopygus michelini* is elevated and found in limestone, *A. orbicularis* is flattened and found in marl ; CHOFFAT (61) also (62) p. 199.—Dwarf fauna including *Hemiaster* spp. ; CHOFFAT (62) p. 44.
- b. In form and surface characters :—Study of variations in *Conoclypeus delanouei*, esp. form, periproct (fig. 2), measurements ; FOURTAU (117) p. 51.—In ornament of apex of *Asterocidaris granulosa*, showing importance attached to this in *Tiarinae* to have been exaggerated ; LAMBERT (186) p. 485.—In gonopores and sutures in *Laganum decagonale* (p. 284), in lunules, pore-fields, &c. of *Echinodiscus laevis* (p. 285), in superomarginals and in position of anus in *Archaster typicus* (p. 289) ; BEDFORD (25).—In *Asterias lincki* (pp. 201, 202), in spines of *A. groenlandica* (pls. v, ix), in *Solaster papposus*, partly as local races (p. 207, pl. vi), in *S. endeca* (p. 210), in *Ctenodiscus crispatus* (p. 223), in *Gorgonocephalus eucnemis* (p. 227) ; DOEDERLEIN (93).—In shape of oral shields and in dorsal plating of *Ophiozona nivea* ; VERRILL (341) p. 302.—General account of variations observed in *Agaricocr.* ; KLEM (173).—In *Cryptoblastus melo* (p. 246), *Schizoblastus sayi* (p. 247), *Orbitremites norwoodi* (p. 247) ; ROWLEY (291).
- c. In colour :—Colours and pigments of *Ast.*, *Oph.*, *Ech.*, *Crin.*, *Hol.*, their variations, contrast of deep and shallow water forms, comparison with *Crustacea* ; NEWBIGIN (241) pp. 129-137.—Variation in colour of *Diadema saxatile* (p. 277), differences in colour between Singapore and Malacca specimens of *Temnopleurus toreumaticus* (p. 280) ; BEDFORD (25).

Colour in life,—of *Synapta vivipara* (p. 583), *Synapta viridis* (p. 587), *Ophiactis krebsi* (p. 586) ; VERRILL (342).—Of *Palaeopneustes* cf. *hystrix* (and in spirit) (p. 7), of *Diadema setosum* and *Echinothrix calamaris*, of *Echinoneus cyclostomus* (p. 16) ; ANDERSON (11).—Of various littoral *Ech.* from S. America ; MEISSNER (229).—Of *Salmacis sulcata* (p. 282) and *S. globator* (p. 283), of *Laganum decagonale* (and in spirit) (p. 284), of *Craspidaster glauconotus* (ditto) (p. 291), of *Retaster cribrosus* (ditto) (p. 298), of *Stellaster incei* (black pigment on ventro-lateral plates only seen in formal specimens) (p. 295) ; BEDFORD (25).—Of *Lophaster furcifer* (p. 468), *Asterias panopla* (p. 486), and *A. lincki* (p. 487) ; LUDWIG (210).—Of *Oph.* ; HAMANN (148) p. 782.—Of *Ophioscolex glacialis* (and spirit) ; GRIEG (139) p. 268.—Of *Antedon rosacea* [i.e. *bifida*], specimens of three very distinct schemes of colour all in same situation ; MALARD (220) p. 28. For Pigments, see II, c, v.

## d. Meristic variation :—

1. Variation from pentamerous symmetry :—Hyperactiny in starfish explicable as due to regeneration of 2 rays in place of 1, no evidence for congenital origin ; KING (171) p. 729.—Origin of the sixth ray, and addition of accessory rays, in *Pycnopodia* ; RITTER & CROCKER (283).—Variation in number of arms of *Crossaster papposus* (p. 463), of *Stichaster albulus* (p. 480) ; LUDWIG (210).—*Asterias* [? *vulgaris*] 4-rayed, apparently due to

fusion of two rays; DAVENPORT (80) p. 196, fig. 180.—Discussion of hyperactiny and heteractiny in *Oph.*, not noticed in the northern collections under examination; GRIEG (139) p. 272.—5 and 6-rayed *Ophiostigma isacanthum* and *Ophiocoma pumila*; VERRILL (342) p. 583.—Stem-fragment of *Balanocr. subteres* with six petals on joint surface, but four cirri at node; LISSAJOUS (195) p. 22.

2. Reduplication or absence of parts:—Variation of numbers of anal plates in *Arbacia dufresnei*; MEISSNER (229) p. 6.—Variations in topotypes of *Hemicidaris lucensis*, esp. in composition of major ambulacra, due to accidental coalescence of plates, also seen in *H. grimaultensis*; LAMBERT (186) p. 477.—Multiple madreporites in *Asterias*; WAITE (345).—Forked arm in *Pteraster militaris*; LUDWIG (210) p. 470.—Variation in number of rami to the arm in *Agaricocr.*; KLEM (173) p. 172.

- e. Abnormalities:—*Phyllophorus pellucidus* and *P. drummondi* with 15 tentacles of which each third one is smaller; LUDWIG (209) pp. 154, 155.—Variations in mouth-parts of *Ophiacantha bidentata* perhaps due to repair of damages; VERRILL (341) p. 322.—Abnormal anal area of cup in *Cyathocr. vanhornei* (p. 64), in *Thysanocr. pentangularis* (p. 72), separation of RR by iBr in some specimens of *Siphonocr. nobilis*, as in *Rhodocrinidae* (p. 88); WELLER (348).—Slight reduction of left postr. basal, with shifting of suture, in *Pisocr.* (= *Triacr.*) *pilula*; SOLLAS (312) p. 268, text-fig. 4; JAEKEL (168) p. 483, fig. 5.—Extra anal in *Pentremites*; ROWLEY (291) p. 248.

### iii. Secondary Sexual Characters:—

- a. Differences of Form or Structure:—Vacant.
- b. Differences of Colour:—Vacant. (See under II, B, ii, c.)
- c. Protection of Young:—In *Hol.* brood-pouch due to direct stimulus of eggs; CUNNINGHAM (76) p. 309.—Viviparity and care of brood in *Cucumaria glacialis* alone among Arctic *Hol.*, contrast with Antarctic; LUDWIG (209) pp. 144, 172.—List of Arctic *Ast.* with care of brood; LUDWIG (210) p. 495.

## (C.) PHYSIOLOGY.

- i. **General:**—Vacant.
- ii. **Circulation:**—Introduction of fluid into the ambulacral system; CUÉNOT (74) p. 454.
- iii. **Respiration:**—Osmosis between internal fluid and external medium maintaining almost an equilibrium of density, in *Asterias rubens* and other marine invertebrates; QUINTON (275).—Respiration of *Ophiothrix fragilis* by bursae and stone-canal; APOSTOLIDÉS (17) p. 317.
- iv. **Alimentation and Digestion:**—Vacant. (See II, D, iv.)
- v. **Excretion and its Products:**—Renal function of various organs in Echinoderms, summary of previous knowledge, conclusions of BORDAS as to respiratory trees of *Hol.* confirmed, and the function now first ascribed to genital organs of *Hol.*; RUSSO (293).—Excretion and phagocytosis; CUÉNOT (74) p. 455.—Excretion in *Echinus*, by endothelium of second curve of intestine, by ovoid gland, peritoneal cells, and amoebocytes (p. 293), in *Antedon*, crystalline corpuscles in mesenteries are perhaps products of excretion (p. 243); CUÉNOT (75).

Pigments (see also II, B, ii, c); NEWBIGIN (241).—Pentacrinin and Antedonin, account abstracted from Moseley, 1877; LIVERSIDGE (196)

p. 265.—Chemical composition of violet pigment in *Echinus esculentus*; GRIFFITHS (141).—Iron in the hepatopancreas of Echinoderms; CUSHNY (77).—Copper normally occurring in *Echinus esculentus*, *Stichopus regalis*, and *Asterias rubens*; DUBOIS (99).

- vi. **Sensation**:—Reflex of Echinoid to light and shadow; UEXKUELL (333).—Asymmetry of some *Crin.* and *Blast.* suggested as due to heliotropism; KLEM (173) p. 179.—Pain not felt by *Asterias* or *Ophiura*, proved by experiment; NORMAN (247) p. 278.
- vii. **Miscellanea and Experimental Physiology**:—Movements of *Antedon* arms and cirri, action of muscles and ligaments; BOSSHARD (44) pp. 103–105.—Coordination of locomotor movements after amputation of arms or cutting of nerve-ring in *Ophiura*; GRAVE (135) p. 87.

No reaction to galvanic current by the most sensitive and moveable parts of adult *Asteracanthion*, *Echinaster*, *Ophioderma*, and *Antedon*; NAGEL (239) p. 337.—Effect of constant electrical current on larvae of *Strongylocentrotus*, *Sphaerechinus*, *Ophiothrix*, and *Asteracanthion*; CARLGREN (56) pp. 470–478.

Effect on ciliary motion in *Ech.* larvae of solutions of NaCl, NaCl+KCl, and  $MgCl_2+CaCl_2$ ; LOEB (197) p. 335 [see also under II, F, viii].

#### (D.) BIONOMICS.

- i. **General Accounts**:—General account of *Echinoderma*; ACLOQUE (2).—General bionomics of *Echinoderma*, esp. *Asterias vulgaris*; DAVENPORT (80) pp. 192–204.
- ii. **Special habits**:—Boring of *Strongylocentrotus lividus* not always put into practice; BEAUMONT (24) p. 756.—For boring, see also ANDERSON & ANDREWS, sub iii.  
Phosphorescence in *Ophiacantha*; VERRILL (341) p. 321.
- iii. **Habitat**:—(a) Of *Hol.*, *Ech.*, *Ast.*, *Oph.*, and *Crin.* in Valencia Harbour; BEAUMONT (24) pp. 796, 797.—Ditto in Port Erin Bay; HERDMAN (157) pp. 49, 50, pls. ii, iii.—Of *Synapta*, *Ophiocnida*, *Ophiothrix*, and *Echinocardium* in Salcombe estuary; ALLEN & TODD (7) p. 187.—(b) *Holothurioidea*,—Arctic and Sub-Arctic (passim, sub species, and p. 171); LUDWIG (209).—*Synapta viridis* among filamentous green algae; VERRILL (342) p. 587.—(c) *Echinoidea*,—influence of habitat on distribution of species, with special reference to spp. quoted sub III, A, iii; BEDFORD (25) p. 272.—Of *Echinus esculentus*; CUÉNOT (75) p. 266.—Vertical position in sand of *Scutella excentrica* related to its asymmetry; HARRINGTON (152).—Boring in coral conglomerate at low-water mark, *Echinostrephus*; ANDERSON (11) p. 14.—*Echinometra lucunter* bores in rock at Christmas Id.; ANDREWS (13) p. 117.—(d) *Asteroidea*,—various spp., see list in III, A, iii; BEDFORD (25).—Of Arctic spp.; LUDWIG (210) passim, esp. pp. 488, 495.—(e) *Ophiuroidea*,—Arctic, discussed under spp., also discussion of epizootic habitats (p. 272); GRIEG (139).—*Ophiura brevispina* at North Falmouth, Mass.; GRAVE (135) p. 84.—*Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 300.—*Ophiothrix angulata* often gregarious among sponges (p. 585), *Ophiactis krebsi*, in sponges and corals, gregarious while young (p. 586); VERRILL (342).—*Ophiothrichidae* (p. 305), *Amphiura* (p. 308), *Ophiacantha* (p. 321), *Ophiochondrus* adapted for clinging to gorgonians (p. 357); VERRILL (341).—(f) *Crinoidea*,—*Antedon bifida*; CUÉNOT (75) p. 228.



- iv. **Feeding**:—Amount of food correlated with rate of growth in *Asterias*; MEAD (228).—Lamellibranchs and a holothurian, *Hoplostactyla*, eaten by *Luidia penangensis*; BEDFORD (25) p. 293.—*Ophiura brevispina* a nocturnal scavenger; GRAVE (135) p. 85.—Young in brood-chamber of *Pteraster obscurus* nourished by slime secreted from modified papulae; DOEDERLEIN (93) p. 215.
- v. **Defence and Protection**:—
- Active:—Irritation resulting from prick by spines of *Diadema* due to epidermal membrane; ANDERSON (11) p. 14.
  - Concealment:—Vacant.
  - Protective Coloration:—Green *Synapta viridis* in green algae; VERRILL (342) p. 587.—Olive-green of *Ophiura brevispina* in seaweed; GRAVE (135) p. 85.—*Hemieuryale pustulata*, *Sigsbeia murrhina*, and *Ophioplus tuberculosus* ornamented and coloured to imitate *Gorgonella* to which they cling (pp. 364, 365), colour of *Amphiura* protective, *A. otteri* salmon or light orange protective in deep water (p. 308); VERRILL (341).
  - Other protective Adaptations:—(?) variations in spines of spp. of *Ophiacantha*; VERRILL (341) p. 321.
- vi. **Locomotion**:—Action of spicules in locomotion of apodous *Hol.*, synopsis of opinions, SLUITER in discussion says that in many *Synaptidae* spicules lie too deep in skin to be effective, and their action would also be hindered by the secretion of slime; HORST (162).—Burrowing of *Scutella excentricus* related to its asymmetry; HARRINGTON (152).—Burrowing of *Ophiocnida brachiata*; ALLEN & TODD (7) p. 187.—*Ophiothrix fragilis*, “il n’emploie ses pattes ventouses que d’une manière passagère”; APOSTOLIDÉS (17) p. 301 [les Ophiurides n’ont pas des pattes ventouses].—*Ophiura brevispina* by arms, spines, and, the spines being short, also by the podia which form fixed points; GRAVE (135) p. 85.
- vii. **Autotomy and Regeneration**:—In *Asterias vulgaris*, in state of nature: 10·76% found regenerating arms; injured arm as a rule thrown off from disc and wholly replaced; experiments on regenerative power of single arms, of portions of disc, of madreporite, of tips of arms; KING (171).—In *Linckia* “regeneration takes place, without any part of the disc being preserved, from a bare arm-fragment” proved [?] by a series of specimens, not by experiment; HUBRECHT (165) p. 328.—Autotomy, constant occurrence in *Asterias tenuispina* and *Echinaster fallax*, exhibition of a *Linckia* in which regeneration seemed to have taken place in an arm devoid of any part of disc, but this doubtful; HORST (161).—Loss of ray followed by regeneration in *Asterias* does not affect normal growth-curve; MEAD (228).—Two regenerating rays in young *Asterias*; DOEDERLEIN (93) pl. ix.—Incipient autotomy of ray in *Archaster typicus*; BEDFORD (25) p. 289. Regeneration in *Oph.*; DAVIDOV (81).—In *Ophiacantha* produces apparent variations; VERRILL (341) p. 322.—*Ophiactis krebsi*, 6 or 7 arms in young, multiplies by fission; VERRILL (342) p. 586.—In *Antedon*; CUÉNOT (75) p. 261.—Bulb of anal tube in type of *Batocr. insuetus* possibly due to regeneration; KLEM (173) p. 179.
- viii. **Parasites and Commensals**:—(a) The following Copepods parasitic on Echinoderms near Naples, *Asterocheres lilljeborgi* on *Echinaster sanguinolentus*, *A. echinicola* on *Echinus esculentus*, *A. violaceus* on *E. microtuberculatus*, *Ophioglypha* (?), and *Ophiothrix* (?), also with *A. minutus* on *Strongylocentrotus lividus* and *Sphaerechinus granularis*, *Collocheres gracilicauda* on *Antedon mediterranea* [?= *bifida*], *Scottomyzon gibberum* on *Asterias rubens*, *Parartotrogus richardi* on



- ? *Ophioglypha lacertosa*, *Cancerilla tubulata* on *Amphiura squamata*, ? *Ophiocoma nigra*, & ? *Ophiothrix fragilis*; also a Lichomolgid on *Sphaerechinus granularis*; GIESBRECHT (129) p. 199.—(b) Copepods—*Dactylopus*, *Esola*, *Rhapidophorus*, *Diogenidium*, and *Abacola*,—also *Leuckartella*, in body-cavity of *Mulleria agassizi*; EDWARDS (103).—Parasites of *Hol.*; ZACHARIAS (363).—Gastropod in gut of *Stichopus tremulus*; BONNEVIE (42).—*Entoconcha* in *Holothuria* sp.; HARRINGTON (152).—(c) Of *Echinus esculentus*, complete list, incl. flagellate *Oikomonas echinorum*; CUÉNOT (75) p. 297, fig. 121.—Mollusc, *Montacuta ferruginosa* commensal with *Echinocardium cordatum*; ALLEN & TODD (7) p. 188.—*Pionodesmotes phormosomae* and its galls; RICHARD (282) pp. 80, 82, figg. 30, 32.—Spines of *Ech.* [Cidarid] bored by some organism in Danian of Seeland; GRÖNWALL (144).—(d) Gastropod *Thyca* on *Stellaster incei*; BEDFORD (25) p. 295.—*Thyca* and *Stylifer*, molluscs parasitic on *Linckia*; HUBRECHT (165) p. 328.—(e) An amphipod crustacean with thoracic leg adapted for clinging to arms of *Ophiura brevispina* which it resembles in colour; GRAVE (135) p. 85.—(f) Of *Antedon*, complete list, incl. holotrichous Infusorian non-descr.; CUÉNOT (75) p. 262, fig. 95.—*Hippolyte* a macrurous crustacean commensal with *Antedon rosacea* and simulating its varied colour; MALARD (220) p. 28.—*Saxicava* boring stem of *Acrochordocr.*; LISSAJOUS (195) p. 16.
- ix. **Echinoderms as Food**:—Fuegians eat sea-urchins and starfish in fabulous quantities, till their stomachs are tight as drums, notwithstanding continued indigestion due to economical methods of cooking; CARBAJAL (55) pp. 411, 412.—*Diadema saxatile* eaten by Malays; BEDFORD (25) p. 277.—*Strongylocentrotus* eaten by *Vulpes lagopus* in winter; LUCAS (208) p. 126.—*Hoplodactyla* [sic] eaten by *Luidia*; BEDFORD (25) p. 293.
- x. **Echinoderms as Geological Agents**:—*Toxopneustes* and *Stichopus* swallow and triturate shells, thus forming shell sand; VERRILL (340) p. 330.
- Echinoderm breccia in Hauterivian of Swiss Alps; TOBLER (329) p. 145.—Bed 15 cm. thick composed of *Rhabdocidaris horrida*; STRUEBIN (324) p. 336.—Brèche récifale à débris d'Echinides et de polypiers au sommet du Tithonique d'Aizy, Alpes françaises (p. 14), "couches entièrement constituées par des débris de *Cidaris cornifera*" in Aptian of Isère (p. 82); KILIAN & LORY (170).—Remanié fragments of Upper Danian Echinoderms form a conglomerate of Paleocene age, of which blocks are found in drift of Rügen and elsewhere (see III, B, ii, f); DEECKE (84).—Crinoid limestone, "marmarone" in Sinemurian of Central Apennines; MORENA (233) p. 183.—Bajocian *Murchisonae*—*Sowerbyi* beds, "Spatkalke" = Calcaire à entroques; TOBLER (328) p. 289.

## (E.) MISCELLANEOUS.

## i. Research and Instruction:—

- a. Preservation:—Collection and preservation of *Echinoderma* for museum purposes; BRITISH MUSEUM (47).—Formalin destroys spicules of *Synapta*; HARTLAUB in DOEDERLEIN (93) p. 234.—Ice-cold alcohol suggested for preservation of *Hol.*; VERRILL (342) p. 583.
- b. Methods of research:—Improved methods of studying segmenting ova; HAMMAR (149) p. 323.—How to rear *Ech.* larvae; MACBRIDE (213, 215).—Methods of preparation for study of minute anatomy of *Echinus*; CUÉNOT (75) p. 299.—Microscope sections of

fossil Echinoid spines; HESSE (159) p. 193.—Microscopical examination of larva of *Ophiura brevispina*; GRAVE (135) p. 83.—Methods of preparation for study of minute anatomy of *Antedon*; CUÉNOT (75) p. 263.—Action of various reagents and stains on muscles and ligaments of *Antedon*, preparation of sections; BOSSHARD (44) pp. 72, 73, 88–90.

- c. Museum Exhibits and Collections:—List of historical specimens of Devonian *Ast.*, *Crin.*, *Cyst.*, and *Blast.* in Amer. Mus. Nat. Hist.; WHITFIELD & HOVEY (351) pp. 196–200.—Types of Conrad's Syrian fossils, incl. *Holaster syriacus*, *Echinus syriacus*, and *Cidaris* spines, found at Yale Univ.; BEECHER (26).—Mortimer Museum, Driffield, Chalk Echinoderms; SHEPPARD (305) p. 67.—Geological collections of Caucasian Museum, Tiflis; LEBEDEV (192).—List of fossil *Crin.* found near Mâcon, with the local collections and museums in which each sp. is represented; LISSAJOUS (195).—Collection of Niagara Echinoderms, Dr Johnston Pettit at Grimsby, Ont.; GRANT (133).

Mode of preparing *Uintacr. socialis* for exhibition; BEECHER (27).—Preparations illustrating endoskeleton, joints, and muscles, in Mus. R. Coll. Surgeons; STEWART (318).

- d. Instruction:—Text-book account; PERRIER (262) pp. 244–276.—Ditto, elementary; PARKER & HASWELL (258) pp. 157–177.—Ditto, Spanish; SEGOVIA Y CORRALES (304).—Cram-book of facts of zoology, with references to Echinoderms passim, and system pp. 221–227; ECKSTEIN (102).—Questions and answers on *Echinoderma*; CATECHISM SERIES (58) pp. 67–74.—General, popular account, with diagram section of Starfish and picture of Echinoderms in an aquarium; SCHMEIL (300) pp. 459–464.—Palaeontology, full account with notes and revision by WACHSMUTH, SLADEN and others; ZITTEL & EASTMAN (369).—Numerous lithogr. figures of *Ech.*, *Crin.* of various geol. ages; TOULA (332).—Elementary lessons and experiments on *Asterias vulgaris* (p. 357), photographs of *Arbacia*, *Clypeaster*, *Echinarachnius*, *Archiaster*, *Amphiura* (pp. 183–188); DAVENPORT (80).

- ii. **Economics**:—Small effect of man's war on starfish and holothurians (p. 13), injurious effects of trawling on *Oph.* and *Ech.* but not on *Hol.* and *Ast.* (p. 39); MCINTOSH (216).—Trepang fishery (*Hol.*) in Russian waters; KUSNETZOW (185) p. 84.
- iii. **Bibliography**:—Guide to literature of *Echinoderma* generally (p. 35), of *Pelmatozoa* (p. 211), of *Hol.* (p. 236), of *Stelleroidea* (p. 279), of *Ech.* (p. 238); BATHER (19).—Review of recent work; LUDWIG (211): ROULE (287).—List of writings,—on recent Echinoderm morphology; CUÉNOT (74) p. 458.—Relating to oceanic explorations of Prince of Monaco; RICHARD (282) pp. 123–140.—On Arctic *Hol.*; LUDWIG (209) pp. 172–178.—On littoral *Ech.* sub-antarctic America; MEISSNER (229).—On Arctic *Ast.*; LUDWIG (210) pp. 496–502.—On Arctic *Oph.*; GRIEG (139) pp. 282–286.—On recent *Oph.*, 608 titles; HAMANN (148) pp. 749–774.—On W. Indian *Oph.*, selected; VERRILL (341) pp. 383–385.—On Italian Miocene *Crin.*; NOELLI (243) pp. 3–5.—On Silurian *Crin.* chiefly American; WELLER (348) pp. 57–60: omissions supplemented; BATHER in Review.
- iv. **Historical, Popular notions, &c.**:—Obituary and appreciation of the work of W. P. Sladen; HOWES (164).—History of research on *Oph.*; HAMANN (148) pp. 775–780.—History of classifications of *Crin.* (p. 138), of work on *Cyst.* (p. 40), *Hol.* (GOODRICH, p. 218), *Ast.* (GREGORY, p. 240), *Oph.* (GREG., p. 260), *Ech.* (GREG., p. 283): BATHER (19).

Holothurians called 'pepinillos de mar' in Spain; SEGOVIA Y CORRALES (304) p. 166.—*Schizaster*, 'crozzi di morti' by Sicilian fishermen; COPPA (72) p. 36.—*Crin.* columnals, 'Indian beads'; BEEDE (29) p. 26.

## (F.) AUXOLOGY.

- i. **General Principles:**—Recapitulation, stalked stage of *Antedon*; BERGH (32) p. 247.
- ii. **General Accounts:**—Of Echinoderm ontogeny, in so far as it throws light on phylogeny; BATHER (19) pp. 3–19.—Outline of life-history of *Echinus esculentus*, up to *Pluteus* stage; CHADWICK (59) p. 22, pl. v.—Ontogeny of *Oph.*; HAMANN (148) pp. 849 et sqq.—Development of *Ophiothrix fragilis* "observations personnelles"; APOSTOLIDÉS (17) p. 322, figg. 143–145.—Development of *Antedon*; CUÉNOT (75) p. 259, figg. 105–107.
- iii. **Formation of Gonads:**—In *Oph.*; HAMANN (148) p. 849.
- iv. **Oviposition, Fertilisation, and Segmentation:**—Sexual maturity correlated with size, which in turn depends on food-supply, proved by *Asterias forbesi*; MEAD (228).  
 Breeding periods,—of *Ech.*, *Ast.*, *Oph.*, *Hol.* at Beaufort, N. C.; WILSON (355) p. 350.—*Ophiocolex glacialis*, in summer months; GRIEG (139) p. 268.—Of *Ophiura brevispina*, and hour of spawning of this and of *Ophiopholis aculeata* and *Ophiocoma echinata*, 8–10 p.m.; GRAVE (135) p. 85.  
*Asterias rubens* at Wimereux ♂ ripe before ♀ (p. 763), *Echinocardium cordatum* shows protandric hermaphroditism (p. 762); GIARD (128).—Hermaphrodite Echinoderms, esp. a *Sphaerechinus granularis*, capable of self-fertilisation; VIGUIER (343).  
 Ovum of *Asterias glacialis* (figg. 16, 29), process of fertilisation in *Toxopneustes* (figg. 21–23), of an Echinoid after fertilisation (figg. 24–26), polyspermy in *Strongylocentrotus* (p. 48, fig. 28); BERGH (32).—Fertilisation (p. 850), segmentation etc. (p. 851) in *Oph.*; HAMANN (148).—Ova and fertilisation of *Ophiura brevispina*; GRAVE (135) p. 87.—Parthenogenesis normal, though exceptional, in *Toxopneustes*, *Arbacia*, *Sphaerechinus*; VIGUIER (343).  
 Protoplasmic connection between blastomeres as described in (123) Zool. Rec. 1887, proved from fresh researches on ova of *Echinus* and *Amphidetes* to be true cell-protoplasm and a primary structure, although secondary connections may form; HAMMAR (149).—General account of cellular physiology including references to Echinoderm ovum; WILSON (353).—For general physiological or cytological observations on ova or spermatozoa or sperm-ova of Echinoderms, see under II, F, viii.
- v. **Larval Stages:**—
  - a. Larval forms and their relations; HOUSSAY (163) pp. 327–330, figg. 267–272.—Of *Hol.*, *Ech.*, *Ast.*, *Oph.*, G. of Palermo, Jan. and Feb.; CAMPAGNA (54) p. 180.—At Falmouth during 1898, 1899; VALENTIN (335).—Various, in plankton at Port Erin in 1900 with figures of *Hol.* pupa, Echinoderm blastosphere and gastrula, *Ast.* gastrula and later stages; CHADWICK (60).
  - b. See (a).
  - c. How to rear larvae; MACBRIDE (213, 215).—*Pluteus* of *Echinus esculentus*; CUÉNOT (75) p. 296.



- d. *Bipinnaria asterigera* in Valencia Harbour, Nov. 25; BROWNE (49) p. 685.
- e. Development, structure, and terminology of *Ophiopluteus*, with the various "species" after Mortensen; and discussion of the larvae of *Ophiura brevispina* (s. *olivacea*) type, and of viviparous *Oph.*; HAMANN (148) pp. 853–862.—Development of *Ophiura brevispina*, pupa larva, description of stages at 36, 42, 48, 60, 66, 120, 132, and 192 hours, comparison with larval development of *Asterina gibbosa*, *Asterias pallida*, and *Antedon*, gastrula supposed formed by delamination, see further under vi, e; GRAVE (135).
- f. *Antedon* development,—popular notes; BURBIDGE (52): Larva compared with that of *Ophiura brevispina*; GRAVE (135) p. 98.

## vi. Organogeny:—

### a. *Echinoderma*:—

- 7, 10. Origin of coeloms and mesoderm; BERGH (32) pp. 159, 178, 180.—Ditto, relations to *Coelentera*; HOUSSAY (163) pp. 403, 404, figg. 353–356.

### b, c. *Holothurioidea* and *Echinoidea*:—Vacant.

### d. *Asteroidea*:—

- 2. Goto's views as to relations of plane of symmetry in larva and adult *Asterina* combated, no secondary bending of pre-oral lobe to right; MACBRIDE (214). [cf. e, 2.]
- 6. Origin of hydrocoel in *Asterina gibbosa*, a true right hydrocoel formed, not from left coelom as Goto says; MACBRIDE (214).
- 7. Development of coelom and periaemal spaces in *Asterina gibbosa*, confirmation, with fresh figures, of his previous observations and criticism of Goto; MACBRIDE (214).—Relations of hydrocoel to enterocoel of larval organ; RITTER & CROCKER (283) p. 266.

### e. *Ophiuroidea*:—

- 2. Relation of larva to adult; HAMANN (148) p. 864.—Bilateral symmetry of larva of *Ophiura brevispina* believed to coincide with that of adult, and to confirm Goto's conclusions as to *Asterias pallida*; GRAVE (135) p. 96. [cf. d, 2.]
- 5. Skeleton; HAMANN (148) p. 868 et sqq.
- 6. Discussion of views as to origin of hydrocoel; HAMANN (148) p. 862.—Hydrocoel independent outgrowth from archenteron, said to rotate through 360°; stone canal arises before dorsal pore and in radius 5, afterwards moving to r. adradius between 5 and 1, origin of podia, buccal tentacles formed *after* the next proximal pair; GRAVE (135).
- 7. Formation of coelom; HAMANN (148) p. 862.—Epigastric or aboral enterocoel supposed to arise from right anterior enterocoel; origin of periaemal ring from pouches of hypogastric enterocoel and from l. anterior enterocoel, the latter being in interradius 5–1, and subsequently forming inner periaemal ring; GRAVE (135).
- 9. Epidermis and nervous system; HAMANN (148) p. 867.—Origin of nervous system and subneural spaces [=epineural canals, Auctt.] in *Ophiura brevispina*; GRAVE (135).

### f. *Crinoidea*:—

- 12. Rudiment of gonads appears in [posterior] interradius CD of stalked larva, in no connection with axial organ, but close to an aboral sinus and lacuna as in *Hol.*, and as supposed to have been the case in *Cyst.*; RUSSO (292).



## vii. Post-larval Growth-stages :—

- c. *Echinoidea* :—Addition of coronal plates, measurements of test and plates, growth of spines in specimens of *Rhabdocidaris annulifera* from 8 mm. to 57 mm. diam. (p. 275), measurements of 7 individuals of *Temnopleurus toreumaticus* from 24.5 to 37 mm. diam. (p. 281), growth-stages of *Laganum depressum* and *L. decagonale* figd., approximation in young (p. 284, pl. xxiii); BEDFORD (25).—Changes in composition of major ambulacrals during growth in *Hemicidaris*; LAMBERT (186) p. 477.
- d. *Asteroidea* :—Rate of growth and consequent age of sexual maturity normally is entirely dependent on food-supply, as proved by observation of *Asterias forbesi*; MEAD (228).—Addition of rays in *Pycnopodia helianthoides* fully described, compared with *Labidiaster*, *Heliaster*, and contrasted with *Brisinga*; RITTER & CROCKER (283).—Neanic *Asterias rubens* (pl. ix), *A. hyperborea* (p. 199, pl. v), old and young *Rhegaster tumidus* compared (p. 221, pl. ix), of *Pteraster obscurus* (pp. 213, 215); DOEDERLEIN (93).
- e. *Ophiuroidea* :—Age-differences in *Ophiacantha* increase difficulties of determining spp. (p. 322), viviparous with 6-armed young *Ophiacantha anomala* (p. 335); VERRILL (341).—Young of *Euryale studeri*, with disc 2-7 mm. diam., descr.; LORIOLO (207).—Young individuals of *Gorgonocephalus eucnemis* and *G. agassizi* with diameter of disc 2-25 mm., descr. and figd. (pp. 269-271), large, old, individuals of *Amphiura sundevalli*, their differences from younger, esp. in dorsal plating of disc (p. 266); GRIEG (139).
- f. *Crinoidea* :—Development of *Agaricocr.* inferred from variations of adult structure [ontogenetic evidence not apparent]; KLEM (173).—*Uintacr. socialis* varying from 20 mm. to 70 mm. in diameter on a single slab; BEECHER (27).
- h. *Blastoidea* :—Growth stages of *Granatoblastida* (p. 246), of *Orophocr. stelliformis* (p. 249), of *Granatocr. mutabilis* (p. 250); ROWLEY (291).

## viii. Developmental mechanics and Experimental Embryology :

—General discussion of the determination-problem in embryology, with reference to Boveri, Conklin, Loeb, Delage, Driesch, Fiedler, Iwanzoff, Morgan, Vernon, Wilson & Matthews, Zoja, and others; HEIDER (155).—General discussion of relations of ♂ and ♀ elements in fertilisation, with special reference to BOVERI (25 Zool. Rec. 1893), (16 Zool. Rec. 1895), GIARD (103 Zool. Rec. 1899, and DELAGE (34) Zool. Rec. 1898; LE DANTEC (193).—General account of experiments on developing ova and conclusions, including references to Echinoderm ovum, with figures; WILSON (353).

Formation of chromosomes and centrosomes in *Echinus* (*Psamm-echinus*) *microtuberculatus*; BOVERI (46) pp. 343-348, pl. xiii.—Pseudopodial processes from unripe ova of same; PROWAZEK (274) p. 305.—Duration of vitality of ova of *Echinus sphaera* in sea-water, the period most favourable for fertilisation, abnormalities of segmentation and polyspermy when fertilised too early or too late after emission; GEMMILL (125) pp. 163, 164.—Practical instructions for inducing artificial fertilisation and polyspermy in Echinoderm ova; BERGH (32) p. 275.

Spermatozoa of *Ech.*,—locomotion; PROWAZEK (274) p. 308 : about 7 inches in still water; GEMMILL (125) p. 172.—Duration of vitality in (p. 170), influence of sea-water on vitality and activity (p. 168), activity prolonged by feeding with bouillon (p. 178); GEMMILL (125).

Over-ripening, effect of cold, staining intra vitam, parthenogenesis; HERTWIG (158).—Successful fertilisation of fragmentary and enucle-

ated ova, merogony, merogonic hybrids between *Echinus*, *Strongylocentrotus*, and *Sphaerechinus*, showing that chromosomes have no individuality and absence of nucleus may even favour fertilisation; DELAGE (85).—Discussion of the work of O. and R. Hertwig (1887), Boveri (1889), Morgan (1893), Loeb (1899), and reply to the criticism of his own work by Giard (1899) and Le Dantec (1899) with re-assertion of his views on fecundation and merogony, all deduced largely from experiments on Echinoderm ova; DELAGE (86).—Criticism of Delage; ANDREWS (14): LE DANTEC (194).—Discussion of DELAGE (43) Zool. Rec. 1898, (67) Zool. Rec. 1899, LOEB (152) Zool. Rec. 1899, and ZIEGLER (230) Zool. Rec. 1898; THOMSON (327).—Segmentation in enucleated fragments of ova of *Psammechinus*; PROWAZEK (274).—A zymase 'spermase' extracted from spermatozoa, and a substance modified by it 'ovulose' extracted from ova, of *Echinus esculentus*, with criticism of PIERI (190) Zool. Rec. 1899; DUBOIS (98).—Criticism of PIERI and DUBOIS, extract of spermatozoa induces incomplete segmentation in unfertilised ova of *Sphaerechinus granularis* and *Arbacia pustulosa* respectively; WINKLER (358).

Absence of calcium from water causes separation of cells in segmenting ovum, in larvae, and in larval tissues of *Echinus* and *Sphaerechinus*, by acting on the connecting layer of the cells, but addition of calcium checks, and to some extent reverses, the process; HERBST (156).—Isolation of blastomeres in decalcified sea-water, different action of animal and vegetative elements, limits of gastrulation and pluteus-formation, studied in ova of *Echinus* and *Sphaerechinus*; DRIESCH (96).—Development of isolated segmentation cells, general resumé; BERGH (32) p. 196 and (33).—Complete ova or blastulae of *Sphaerechinus granularis* and *Echinus microtuberculatus* respectively, caused to fuse into one, which produces an individual and harmonious pluteus; DRIESCH (97).—Abnormal larvae experimentally produced, general resumé; BERGH (32) p. 212.

Hybrid larvae,—*Sphaerechinus* ♀ × *Strongylocentrotus* ♂ vary in type according to season, i.e. according to maturity of ♂ or ♀, and are fewer in proportion as ova are stale, but contrary is case with *Strongylocentrotus* ♀ × *Sphaerechinus* ♂; also *Echinus acutus* ♀ × *Strongylocentrotus* ♂, and × *E. microtuberculatus* ♂; but *E. acutus* ♀ × *Sphaerechinus* ♂, and × *Arbacia* ♂, and × *Echinocardium cordatum* ♂, also *Dorocidaris* ♀ and ♂ × *Sphaerechinus* and *Arbacia* ♂ and ♀, were less successful or quite failures; VERNON (337).—*Psammechinus miliaris* ♀ × *Asterias rubens* ♂, produce blastulae; GIARD (127).

Effect of environment (sc. temperature and change of salinity) on growth decreases from time of impregnation onwards, in case of larvae of *Strongylocentrotus lividus* and *Sphaerechinus granularis*; VERNON (338).

Mitosis induced in unfertilised *Arbacia* ova by deoxygenation, heat, ether, chloroform, and alcohol; MATHEWS (226).—Ditto, to varying extent, by solutions of magnesium chloride, sodium chloride, and strychnine, and by freezing, with action of preserving fluids on the astrospheres thus formed; MORGAN (235).—Segmentation of ova of *Psammechinus* under influence of  $MnCl_2$  (pseudopodia formed) and  $MgCl_2$ , also under pressure; PROWAZEK (274).—Development of larvae of *Ech.* stopped by pure NaCl solution; LOEB (197).—Effect of Mg, K, Na, and Ca ions on segmenting ova of *Ech.* similar to their effect on ova of *Fundulus*, which is described (p. 393), criticism of Herbst's views as to substances necessary for development (p. 396); LOEB (198).—Effects of Mg, K, Na, Ca, and Li ions on fertilised ova of *Arbacia*, both separately and in conjunction, with osmotic pressure

controlled; solutions which allow the formation of a skeleton in the *Pluteus*; attempt to produce blastulae in unfertilised ova, by treatment with various solutions but without altering the concentration of sea-water; a long series of experiments leading to result that unfertilised ova of *Arbacia* placed for two hours in a solution of equal parts of  $\frac{2}{3}$  n  $MgCl_2$  and sea-water may reach pluteus stage; LOEB (199).—Experiments described in (199) repeated on unfertilised ova of *Strongylocentrotus franciscanus* and *S. purpuratus*, with additional precaution of sterilising sea-water, plutei produced; LOEB (201).—Development of unfertilised ova due not to the particular solution, but to concentration and increased osmotic pressure of surrounding medium, which causes abstraction of water from the ovum, successful results with same *Ech.* spp., also with *Asterias forbesi*; LOEB (202).—Short summary of preceding results and contrast with experiments on unfertilised ova of *Chaetopterus*, addition of K-ions without concentration induces development in this Annelid but not in Echinoderms; LOEB (203).—Criticism of Loeb's conclusions as to influence of chemicals in parthenogenesis; the results seem rather due to relative dehydration and consequent osmotic pressure; BATAILLON (18).—Experiments of Loeb repeated without success on ova of *Arbacia*, *Toxopneustes*, and *Sphaerechinus granularis*; VIGUIER (344).—Facts of normal parthenogenesis casting doubt on results of Loeb; VIGUIER (343).—Parthenogenetic partial development of *Asterias* ova under influence of  $MgCl_2 \cdot 6H_2O$ ; GIARD (127).—Parthenogenesis in *Ech.*, precautions needed to prove it, a criterion is the slowness of development, induced by saline solutions, experiments of Loeb (supra) defended against Viguiers criticism (supra), but process due not to ions but to dehydrating action of the salts; GIARD (128).

### III. DISTRIBUTION.

#### A. GEOGRAPHICAL.

- i. **General** :—State of knowledge of distrib. of Echinoderma; ORTMANN (254) p. 91.—Inshore migration of *Ech.* probably due to food-supply, but may be connected with breeding; GEMMILL (125) p. 179.—Theoretical considerations of distrib. of spp. and varr. of *Ech.* and *Ast.*, effect of habitat and isolation, specific centres; BEDFORD (25) pp. 272, 287.—Echinoderms of deep sea; CHUN (63) pp. 485–496.—Evidence against bipolarity afforded by Antarctic *Ech.* and *Oph.*; KOEHLER (181).—Contrast of Arctic with sub-Antarctic *Oph.*; GRIEG (139) p. 281 : see also sub v, vi.
- ii. **Atlantic Ocean and adjacent Seas** :—General account of Echinoderma collected on voyages of Prince of Monaco, esp. spp. of *Dytaster*, *Styracaster*, *Freyella*, *Paragonaster*, *Hymenaster*, *Antedon*, *Pentacr.*, *Rhizocr.*; RICHARD (282) pp. 75–81.—N. Atlantic generally, *Solaster papposus* var. nov. *squamata*; DOEDERLEIN (93) p. 208.  
 Scandinavia :—Norway. Fjords, popular account of fauna, incl. Echinoderms; GRIEG (140).—Kanstadfjord on Hinnö, 68°–69° N., *Asterias stellionura*; NORDGAARD (246) p. 24.—Puddefjord near Bergen, spp. of *Echinus*, *Strongylocentrotus*, *Asterias*, *Ophiocoma*, *Cucumaria*; NORDGAARD (245) p. 8.  
 German coasts, popular account of Echinoderms; MARSHALL (225).—Holland, Zwiyn, *Asterias*, *Echinocyamus*; LAMEERE (189) p. 21.—Belgium, key to spp. of Echinoderms; LAMEERE (186) pp. 30–37.  
 British Coasts :—*Solaster papposus*, var. nov. *anglica*; DOEDERLEIN (93) p. 207.—Distribution of *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.* S.W.



corner of I. of Man (pp. 38, 39, pl. i), in Port Erin Bay (pp. 49, 50, pl. iii); HERDMANN (157).—Port Erin, plankton, larvae of *Ech.*, *Ast.*, *Oph.*, and *Hol.*; CHADWICK (60).—W. Coast of Ireland, Valencia Harbour, *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.*, and nature of bottom; BEAUMONT (24) pp. 796, 797: *Bipinnaria* of *Luidia*; BROWNE (49) p. 685.—English Channel,—Salcombe Estuary, *Hol.*, *Ech.*, *Ast.*, *Oph.*; ALLEN & TODD (7) p. 187.—Falmouth, various larvae; VALLENTIN (335).

French Coasts:—Channel, Atlantic, Mediterranean, commoner Echinoderms; CLEVES (70).—Key to all spp. of Echinoderms; ACLOQUE (1) pp. 454–466.

Mediterranean:—G. of Palermo, larvae of *Hol.*, *Ech.*, *Ast.*, *Oph.*; CAMPAGNA (54) p. 180.—Coasts of Morocco, the Arctic sp. *Elpidia glacialis*, also n. spp. of *Ankyroderma*; PERRIER (264) p. 177.—Black Sea, Echinoderm fauna restricted to *Synapta* 1 sp., and *Amphiura* 2 spp., all very small, but *Ech.* spines are brought in by the Bosphorus under-current; MURRAY (238) pp. 685, 695.

N.W. Coast of Africa:—Liberia, n. sp. of *Ophiocnemis*; LORIOI (207).

American Coast:—Distrib. of *Ophiura brevispina*; GRAVE (135) p. 84.—Canada, list of *Ech.* dredged by 'Challenger'; AMI (10).—Wilmington, N. C., *Asterias*, *Arbacia*, *Toxopneustes*; WILSON (354).—Beaufort, N. C., occurrences and breeding periods of *Ech.*, *Ast.*, *Oph.*, *Hol.*; WILSON (355) p. 350.—West Indian region,—complete list of *Oph.*, spp. of *Ophiura*, *Ophiopeza*, *Pectinura* Forbes, *Ophiopaepale*, *Ophiolepis*, *Ophiozona*, *Ophioceramus*, *Ophiothyreus*, *Ophiermus*, *Ophioglypha*, *Ophiocten*, *Ophiomusium*, *Ophiolipus*, *Ophiomastus*, *Ophiophyllum*, *Ophiopyren*, *Ophiocoris*, *Ophiothrix*, *Ophiocoma*, *Ophiopsila*, *Ophiactis*, *Amphiura*, *Amphipholis*, *Amphiodia*, *Amphioplus*, *Amphilimna*, *Ophiocnida*, *Hemipholis*, *Ophiophragmus*, *Amphilepis*, *Ophionema*, *Ophionephthys*, *Ophionereis*, *Ophioplax*, *Ophiostigma*, *Ophiocytra*, *Ophiacantha*, *Ophialcea*, *Ophiacanthella*, *Ophiomitrella*, *Ophiolimna*, *Ophiopora*, *Ophiopristis*, *Ophiotreta*, *Amphipsila*, *Ophiomitra*, *Ophioplithaca*, *Ophiocamax*, *Ophiothamnus*, *Ophioblebs*, *Ophioblenna*, *Ophiotoma*, *Ophiochondrus*, *Ophiochondrella*, *Ophioscolex*, *Ophioscisma*, *Astrogeron*, *Ophiobyrsella*, *Ophiobyrsa*, *Ophiomyces*, *Ophiohelus*, *Ophiomyxa*, *Ophiodera*, *Hemieuryale*, *Ophioplus*, *Sigsbeia*, *Ophiobrachion*, *Astrophyton*, *Gorgonocephalus*, *Astrocnida*, *Astrogomphus*, *Astroporpa*, *Astroschema*, *Ophiocrea*, *Astronyx*; VERRILL (341) pp. 372–382.—Jamaica,—Kingston Harbour, Old Harbour, Portland Bight, *Hol.*, *Pentaceros*, *Luidia*, *Oph.*, *Toxopneustes*, *Cidaris*; DUERDEN (100) p. 613: Bluefields Bay, *Toxopneustes*, *Hipponoë*, *Echinometra*, *Cidaris*, *Oreaster*, *Astrophyton*; DUERDEN (101) p. 620: near Port Antonio, *Synapta*, *Muelleria*, *Stichopus*, *Chiridota*, *Toxopneustes*, *Cidaris*, *Echinometra*, *Diadema*, *Hipponoe*, *Echinoneus*, *Brissus*, *Clypeaster*, *Mellita*, *Pentaceros*, *Linckia*, *Ophiocoma*, and spp. indett.; CONANT (71).—Bermuda, added spp. of *Ophiura*, *Ophiolepis*, *Ophiothrix*, *Ophiocoma*, *Ophiopsila*, *Ophiactis*, *Amphipholis*, and *Synapta*; VERRILL (342).

iii. Indian Ocean and adjacent Seas:—Echinoderms dredged by ss. 'Valdivia,' spp. of *Asthenosoma*, *Brissopsis*, *Dorocidaris*, *Echinothrix*, *Eucidaris*, *Phormosoma*, *Porocidaris*, *Schizaster*, *Spatangus*, *Sperosoma*, *Asterias*, *Bathybiaster*, *Brisinga*, *Culcita*, *Dipsacaster*, *Gnathaster*, *Luidia*, *Pontaster*, *Porania*, *Solaster*, *Styracaster*, *Zoroaster*, *Amphiura*, *Astrophyura*, *Ophiacantha*, *Ophiocten*, *Ophioglypha*, *Ophioplithus*, and n. spp. of *Pelagothuria*, *Dermatodiadema*, *Echinus*, *Gymnopatagus* n. g., *Palaeopneustes*, *Stereocidaris*, *Strongylocentrotus*, *Gnathaster*, *Hyphalaster*, *Nymphaster*, *Pectinidiscus* n. g.,



*Pentagonaster*, *Styracaster*, *Asteronyx*, *Ophiopyren*, *Eudiocr.*, *Metacr.*, *Pentacr.* [i.e. *Isocr.*], *Rhizocr.*, the chief locc. being Cocos Is., S. Nias Channel, Zanzibar, Somali coast, Bouvet Id., Agulhas bank, G. of Aden, Maldives, G. of Guinea, Siberut Str., and Diego Garcia; CHUN (63).—*Oph.* collected by the 'Investigator' from 0 to 40 fms., list of 49 spp. of which 13 spp. and 2 varr. were new to science, figures of n. spp., but not of n. varr. ["il est à désirer que les zoologistes.....publient des descriptions accompagnées de dessins" p. 3], total number of Indo-Pacific spp. of *Oph.* given as 193; KOEHLER (179).—List of *Spatangoidea* in Indian Museum; ANDERSON (11) p. 10.

Red Sea, plankton, *Plutei* and young *Ast.*; STEUER (317) p. 412.

Laccadive Sea, *Pourtalesia* (p. 10); between Bombay and Colombo, *Schizaster*, *Fibularia*, *Clypeaster*, *Peronella*, *Echinolampas*, *Eupatagus*, *Palaeopneustes* 200 at a haul, *Cidaris alcocki* 600–800 at a haul, *Lovenia*, *Zoroaster*, *Pontaster hispidus* 200 at a haul, *Brisinga* (pp. 6–8); Long Id. in the Moscos group, *Echinolampas* and *Pericosmus*; between Cocos Is. and Port Blair, *Coelopleurus*, *Platybrissus*, *Salenia*, *Trigonocidaris*, *Dorocidaris*, *Phyllacanthus*, *Rhabdocidaris*, *Laganum*, *Lovenia*, *Pericosmus* (p. 5); Andaman Sea, *Cionobrissus* (p. 10); Andaman Is., Casuarina B., *Echinodiscus*, *Laganum* (p. 11), Paget Id., *Diadema*, *Brissus carinatus* (p. 13), Craggy Id., *Diadema*, *Echinothrix* (p. 13), Lamia B., *Echinostrephus* (p. 14); Invisible Bank, *Metalia*, *Echinoneus*, *Diadema*, *Cidaris*, *Parasalenia gratiosa* (p. 16); ANDERSON (11).

Singapore and Malacca, spp. of *Rhabdocidaris*, *Diadema*, *Temnopleurus*, *Salmacis*, *Laganum*, *Arachnoides*, *Echinodiscus*, *Lovenia*, *Metalia*, and *Brissus*, and n. sp. of *Asthenosoma*, with general remarks on their distrib. (p. 272), spp. of *Archaster*, *Astropecten*, *Luidia*, *Iconaster*, *Goniodiscus*, *Stellaster*, *Anthenea*, *Pentaceros*, *Culcita*, *Palmipes*, *Retaster*, *Patiria*, *Asterina*, and n. spp. of *Craspidaster* and *Astropecten*, with general remarks on their distrib. (p. 287); BEDFORD (25).—Singapore, n. spp. of *Ophiocnemis* and *Euryale*; LORIOI (207).—Ternate,—spp. of *Synapta*, *Chiridota*, *Stichopus*, *Holothuria*; MARENZELLER (221): list of *Ech.*, *Ast.*, *Crin.*, and *Oph.*, incl. *Ophiomastix luetkeni* n. sp., last also from Cebu; PFEFFER (267).

Christmas Id., list of *Ech.*, *Ast.*, *Oph.*, determined by F. J. Bell; ANDREWS (13) p. 116.

iv. **Pacific Ocean and adjacent Seas**:—N. American coast, list of *Ech.* with localities; ORCUTT (253).

Peru, n. sp. of *Ophidiaster*; LORIOI (207).

New Zealand:—Otago, 10–30 fathoms, *Astrogonium*, *Asterina*, other *Ast.* and *Hol.*; BENHAM (30).—*Ophiocreas constrictus* n. sp., first *Astrophytid* recorded from N. Z. waters; FARQUHAR (107).

Japan, n. sp. of *Antedon*; LORIOI (207).

v. **Arctic Ocean and adjacent Seas**:—Geogr. and bathymetric distrib. of Arctic and sub-Arctic *Hol.*, with table of comparative horizontal distrib. (p. 168), and of vertical (p. 170), and general discussion (pp. 169–172); LUDWIG (209).—Ditto *Ast.*, with special reference to Spitzbergen; LUDWIG (210) passim, esp. pp. 492–495.—From Tromsö to Spitzbergen and Bear Id., spp. of *Strongylocentrotus*, *Schizaster*, *Asterias*, *Solaster*, *Cribrella*, *Pteraster*, *Hymenaster*, *Hippasteria*, *Rhegaster*, *Ctenodiscus*, *Pontaster*, *Leptoptychaster*, *Ophioglypha*, *Ophioceten*, *Ophiopholis*, *Ophiacantha*, *Ophioscotez*, *Gorgonocephalus*, *Antedon*, *Cucumaria*, *Ankyroderma*, *Trochostoma*, *Synapta*, note specially *Solaster syrtensis*, *Pteraster obscurus*, and

*Ctenodiscus crispatus*; *Hol.* by LUDWIG, and notes on Stations by HARTLAUB : DOEDERLEIN (93).—Spitzbergen, distrib. of Echinoderms, esp. *Antedon eschrichti* in Storfjord; SCHAUDINN (296) pp. 235, 236.—West Spitzbergen, Bear Id. Tromsø, *Hol., Ech., Ast., Oph., Crin.*, with depth, temperature, sea-bottom; HARTLAUB (153).—Seas around Spitzbergen, N. of Norway, Murman coast, White Sea, spp. of *Ophiopleura*, *Ophiura*, *Ophiocten*, *Ophiopholis*, *Amphiura*, *Ophiopus*, *Ophiacantha*, *Ophioscolex*, *Gorgonocephalus*, followed by general discussion of distrib. of Arctic *Oph.*, comparison with sub-Antarctic; GRIEG (139).—Murman Coast, Echinoderms, pp. 447, 452, 458, esp. *Myriotrochus*, *Trochostoma*, *Psolus*, *Schizaster*, *Hymenaster*, *Pentagonaster*, *Rhegaster*, *Lophaster*, *Asterias*, *Ophiopleura*, *Ophioscolex*, *Antedon*; KNIPOVITCH (175).—White Sea, list of Echinoderms; SINITZIN (307) : *Solaster*; SINITZIN (308).

- vi. **Antarctic Ocean and adjacent Seas**:—Subantarctic America and S. Georgia, littoral spp. of *Cidaris*, *Arbacia*, *Echinocidaris*, *Strongylocentrotus*, *Echinus*, *E. neumayeri* n. sp., *Hemiaster*, *Tripylus*, *Schizaster*, their general distrib. compared with the northern fauna; MEISSNER (229).—Collections of 'Belgica' *Sterechinus antarcticus* and *Amphipneustes lorioli* nn. genn. et spp., *Goniocidaris mortenseni* n. sp. and 14 n. spp. of *Ophioglypha*, *Ophiocten*, *Ophiopyren*, *Ophiopyrgus*, *Ophiomastus*, *Ophiacantha*, *Ophiocamax*, and *Amphiura*; KOEHLER (180): contrasted with Arctic and Subantarctic faunas; KOEHLER (181).—Echinoderms dredged by ss. 'Valdivia,' *Pentactella*, and n. spp. of *Hyocr.* and *Bathycr.*; CHUN (63).—Patagonia, curious account of *Hol., Ech., Ast., Crin.*; CARBAJAL (55) pp. 411, 412.

## B. GEOLOGICAL.

### (i) GENERAL.

Geol. distrib. of Holothurians, critical review of alleged fossil *Synapta*; SPANDEL (313).—The concentration in limited areas of numerous supposed species of *Dolatocr.*, *Batocr.*, and *Platycr.*, contrasted with the known distribution of plants and animals; KLEM (173) p. 176. *Crin.* columnals of uncertain age as drift in Pliocene sand near Bonn; STOLLEY (321) p. 46.

### (ii) CAINOZOIC.

- a. **General**:—Japan, *Crin., Ast., Ech.*, generic names only, with localities in Japanese; YOSHIWARA (361) pp. 1, 2.—Japan and Formosa, *Ech.*, generic and specific names in Latin, localities in Japanese; YOSHIWARA (362) pp. 8, 9.—Tertiary? of Pemba Id., E. Africa, *Salmacis*?, *Amblypneustes*, *Clypeaster*, *Maretia*; WOLFF (360).—Late Tertiary of Caldera, Chile, *Encope chilensis*; MOERICKE (232) pp. 589, 609.
- b. **Pleistocene**:—Of various locc. on shore of Murman Sea, Arctic, *Strongylocentrotus droebachiensis* and *Ech.* spines (pp. 31, 32, 34, 36, 38-42), shore of White Sea, *Oph.* arm-fragments (p. 90); KNIPOVICH (176).—*Toxopneustes droebachiensis* beneath moraine at Bergen; REKSTAD (280).—Calabria, *Echinocyamus*; STEFANO (316): Monteleone, list of *Ech.* with spp. of *Rhabdocidaris*, *Arbacia*, *Echinolampas*, *Brissus*, *Brissopsis* new to loc.; AIRAGHI (4).—Nizzetti near Aicastello in Catania, *Echinocyamus*, *Strongylocentrotus*, *Cidaris*; SCALIA (295) p. 9.

- c. **Pleiocene**:—Near Civitavecchia, *Clypeaster*, *Schizaster*, *Dorocidaris*; MELI (230) p. 332.  
 Middle Pleiocene:—Esplugas near Barcelona, *Cidaris*, *Clypeaster*; ALMERA (9) p. 760.  
 Lower Pleiocene:—Plaisancian, Gebel Chelloul, Egypt, n. sp. of *Echinocardium*; FOURTAU (115) p. 62.—Plaisancian age of sands with *Clypeaster aegyptiacus* at Gizeh, established by *Pecten* fauna; DEPÉRET (89) p. 403.—*Ech.* in British Crag compared with Amstelian, Scaldisian, and Diestian of Holland; HARMER (150) p. 777, and (151) p. 330.
- d. **Meiocene**:—(Or? Pliocene) of Lindi, German E. Africa, *Clypeaster Plesianthus*, *Echinolampas*, of Dunga, Zanzibar, *Maretia* and *Clypeaster*; WOLFF (360).—Sommières (Gard), spp. of *Echinolampas* and *Scutella*; ROMAN (285).—Umbria, spp. of *Echinolampas*, *Conoclypeus*, *Echinocyamus*, *Echinanthus*, *Schizaster*; VERRI & ANGELIS D'OSSAT (339) p. 259.—Appennines, *Spatangus*, *Conoclypus*; NELLI (240) p. 415.—Camerina, *Brissopsis* and *Hemiaster*; MARIANI (224).—Near Syracuse, *Clypeaster*, *Scutella*, *Schizaster*; COPPA (72) p. 35.—Porto Torres in Sardinia, n. sp. of *Heteroclypus*; AIRAGHI (3).—Theben-Neudorf, Hungary, *Clypeaster*, *Cidaris*; KORNHUBER (183) p. 87: *Ech.*; TOULA (331) p. 8.—“Rudoltitz Tegel” E. Bohemia, *Diadema*; PROCHÁZKA (271) pp. 20, 146.—Mähren [Moravia] *Diadema*; PROCHÁZKA (270) pp. 9, 19, 31.—Clay-partings of Tschokkrakalk in Kertsch peninsula, also marls with *Pecten denudatus* of Cape Tarchan, yield *Oph.* arm-vertebrae similar to *Ephippium* Lomnicki; ANDRUSOV (15).—Burma, *Cidaris* spp. and *Clypeaster* sp. (pp. 27, 28, 44), paucity of Echinoid fauna how explained (pp. 95, 109), *Pseudodiadema* sp. in Pegu group?; NOETLING (244).—Formosa, limestones containing Echinoderm [i.e. Echinoid] spines; NEWTON & HOLLAND (242).—Patagonian beds of various locc. *Hyechinus*, *Echinarachnius*, *Schizaster*; HATCHER (154) p. 101.
- Upper Miocene:—Upper Mediterranean series,—Mezösegér beds, Torda, Siebenbürgen, *Spatangus*; northern half of Siebenbürgen basin, compiled list of *Ech.*; KOCK (178) p. 136.—Cacova, Siebenbürgen, *Clypeaster*; near Felső-Orbó, Siebenbürgen, *Clypeaster*, *Schizaster*; LOERENTHEY (204) p. 61.—Leythakalk in Siebenbürgen basin, compiled list of *Ech.*; KOCH (178) p. 168: *Echinocyamus*, *Scutella*, *Clypeaster*, and *Ast.*; LOERENTHEY (204) p. 59.—Below Leythakalk, near Csegez, Siebenbürgen, *Clypeaster* cf. *parvus*; in Leythakalk, *Echinolampas* and *Clypeaster altus*; ROTH v. TELEGD (286) p. 95, see also p. 98.—Vindobonian (between Tortonian and Helvetian) of Gebel Geneffe, Lower Egypt, *Ech.*; DEPÉRET (89) (p. 403).
- Middle Miocene:—of Vena near Monteleone in Calabria, n. spp. of *Conoclypus* and *Heteroclypus*; AIRAGHI (3).—Of Castelnuovo nei Monti, *Cidaris*, *Conocr.* (p. 123), *Dorocidaris*, *Spatangus* (p. 129); DEL BUE (87).—Upper Helvetian, “zona sabbiosa a *Pentacr. gastaldii*”, near Torino, spp. of *Pentacr.* [i.e. *Isocr.*] 1 nov., *Conocr.* [= *Rhizocr.*], *Antedon* 6 nov., and *Actinometra* 1 nov., 4 others being new to Italy; NOELLI (243).—Helvetian II, Gebel Ramlieh, S. of Suez, spp. of *Clypeaster*, *Echinolampas*, and n. sp. of *Schizaster*; FOURTAU (115) p. 59.
- Lower Miocene:—Lower Mediterranean series, near Czereczel, Siebenbürgen, *Macropneustes? compressus*; KOCH (178) p. 56.—Upper Burdigalian near Ste Croix (Jura Vaudois) *Cidaris*, *Psamm-echinus*; DOUXAMI (95) p. 420.—Langhian, Marne scagliose of Montedoro in Central Appennines, *Maretia*, *Hemiaster*; MORENA



(234) p. 477.—Upper Burdigalian of Gebel-Geneffe, Lower Egypt, *Echinolampas*, *Scutella*, *Lovenia*, *Cidaris*, *Echinoneus*; DEPÉRET (89) p. 402.—Aquitanian of Acqui, Visone, and Monte Capriolo, considered as base of Miocene, lists of *Ech.*: ALESSANDRI (6).

Lower Miocene, Patagonian formation, *Cidaris antarctica*, *Toxopneustes praecursor*, *Cyrtoma posthumum*, all n. spp.; ORTMANN (255) p. 369.

e. **Oligocene**:—Upper,—Lower Cerithienschichten, Offenbach am Main, n. sp. of *Synapta*; SPANDEL (313).

Lower Oligocene:—Sand in clefts of Muschelkalk at Bernburg, *Ech.* spines & plates; MERKEL & FRITSCH (231) p. 68.—Tongrian of Bormida basin, n. var. *Echinolampas*; AIRAGHI (5).—Lower Oligocene or Ligurian, Egypt, *Ech.*; BLANCKENHORN (37) p. 459.—Priabonian near Kairouan in Tunis, various *Ech.*, esp. *Scutella* and *Clypeaster*; FLICK (111).—Priabona beds, summary of Echinoderm fauna (p. 288), for spp. vide sub *Bourgueticr.*, *Conocr.*, *Crenaster*, *Cidaris*, *Leiocidaris*, *Rhabdocidaris*, *Porocidaris*, *Coptosoma*, *Cyphosoma*, *Orthechinus*, *Leiopodina*, *Echinocyamus*, *Sismondia*, *Laganum*, *Clypeaster*, *Echinanthus*, *Echinolampas*, *Ditremaster*, *Linthia*, *Schizaster*, *Prenaster*, *Parabrissus*, *Toxobrissus*, *Lambertia*, *Breynia*, *Hypsopatagus*, *Euspatangus*; OPPENHEIM (251).

f. **Eocene**:—at Ste. Croix, S. of France, *Echinus*, spp.; GROSSOUVRE (145) p. 65.—Plastic clay (Tarrassthone) of Fehmarn, Schleswig-Holstein, *Pentacr.*; STOLLEY (320) pp. 110, 133.—Vorderalpen,—Adelholzerer Nummulitenkalk, *Conoclypeus*, *Echinocyamus* (p. 25): Eisenärzter beds, *Conoclypus*, “*Bourgueticrinus goniaster* [sic] erhält eine ausserordentliche Häufigkeit” (pp. 26, 28): Kressenberger beds, *Conoclypeus* (p. 33), *Prenaster*, *Echinanthus*, *Echinolampas* (pp. 37, 44): Grenzsandstein at Maurerschurf, *Bourgueticr.*, *Cidaris*, *Echinanthus*, *Echinopsis*, *Linthia* (p. 84); REIS (278).—Kirrit, Somaliland, *Conoclypeus*? GREGORY (136).—Near Port Willunga, S. Australia, *Cidaris*, *Lovenia*, *Scutellina*, *Fibularia*, *Echinolampas*, *Echinus*, and *Antedon*; CLARK (64) p. 5.—Mulgundawa near Wellington, S. Australia, *Cidaris*, *Echinus*, *Monostychia*, *Scutellina*, *Fibularia*, *Astrogonium*, *Pentacr.*, *Antedon*; TATE (326) p. 111.

Upper Eocene:—Marnes intragypseuses, Paris, *Macropneustes*; BOURSALT (45).—Upper Mokattam (=lower Bartonian), Egypt, *Ech.*; BLANCKENHORN (37) pp. 437–440.

Middle Eocene:—S.E. Europe, horizon and distribution of *Euspatangus ornatus* discussed; OPPENHEIM (250) p. 115.—Untere Grobkalk Schichten, Gyaluer Alps, Hungary, *Psammechinus*, *Sismondia*; PÁLFI (256) p. 64.—Egypt,—n. spp. of *Coptosoma*, *Mistechinus*, *Brissopsis*; FOURTAU (115) pp. 31, 32, 42.—Lutetian II, characterised by *Euspatangus cairensis*, Lutetian I by *E. formosus*; FOURTAU (117) p. 56.—Lower Mokattam beds, *Ech.*; BLANCKENHORN (37) pp. 419–424.

Lower Eocene:—Egypt,—Lower Libyan beds of Farafrah Oasis considered in part Mid. Eocene because of *Schizaster foveatus* and *Micropsis mokattamensis*; FOURTAU (116) p. 482.—Upper Suessonian or upper Libyan beds, *Ech.* (p. 415), Middle Suessonian or lower Libyan beds, Egypt, *Ech.* (pp. 410, 413), BLANCKENHORN (37).—Lower Libyan beds, distribution of *Conoclypeus delanoueii*; FOURTAU (116) p. 483: its occurrence at Gebel Galala el Baharieh; FOURTAU (119).—Lower Libyan at Gebel Haridi, *Rhabdocidaris navillei* and spp. of *Conoclypeus*, *Echinolampas*, *Ditremaster*, *Linthia*, *Megapneustes*, *Plesiospatangus*, and n. spp. of *Cassidulus*, *Schizaster*, *Prenaster*, *Megapneustes*, *Euspatangus*, and *Hypsopatangus* (p. 27 et



- sqq.), Farafrah Oasis, n. sp. of *Echinolampas* (p. 37), near Manfalont, Arabian Chain, n. sp. of *Euspatangus* (p. 54); FOURTAU (115).—Lower Suessonian or Kurkur beds, Libyan desert, *Ech.*; BLANCKENHORN (37) p. 406.
- Lowest Eocene:—Egypt,—Gebel Garah, W. of Assouan, *Bothriolampas*, *Porocidaris*; Gebel Gournah, W. of Thebes, formerly thought Cretaceous, but contains Eocene *Trachyaster*: FOURTAU (116) p. 481.—Montian of Paris basin, discussion of fauna, incl. spp. *Cidaris*, *Goniopygus*, *Echinanthus*, *Cassidulus*; MUNIER-CHALMAS (237).—Echinoderm-breccia [or rather conglomerate] found in drift at Rügen, contains rolled fragments of *Ananchytes sulcatus* et al., *Phymosoma princeps*?, *Goniaster*?, *Pentacr. bronni*, from the Upper Danian Saltholm Limestone, similar blocks in Holstein and Neubrandenburg; DEECKE (84): also in Mecklenburg; GEINITZ in Abstract: appears to be the same as a block with remains of *Pentacr.*, *Bourgueticr.*? and *Ech.* found in boulder clay at Limhamn, Scania, and supposed topmost Cretaceous or lowest Tertiary; LUNDGREN (212).

## (iii) MESOZOIC.

- a. **General**:—Table of distribution of principal *Ech.* spp. from Permian to Toarcian; LAMBERT (187) p. 44.
- b. **Cretaceous**:—General distrib. of *Ech.* in Portugal, after De Loriol, with corrections, CHOFFAT (62) p. 5.
1. **Upper**:—
- Mokošín and Valy in Bohemia, *Ech.*; ZELIZKO (367) pp. 6, 10.—Podolia, spp. of *Holaster* and *Epiaster*; RADKEVICH (277) p. xxxvi.
- Daghestan, *Ananchytes*, *Holaster*, *Offaster*, *Inaster* [sic]; LEBEDUEW (192) p. 29.—Dakota division, Austin Chalk at Cow Creek, Rio Grande, Texas, *Cidaris*; VAUGHAN (336) p. 19.—Ripley beds at Wilmington, N.C., *Cassidulus*; HOLMES (160) p. 129.
- Garumnian:—divided between Cretaceous and Tertiary, near Tercis and Angumé, in S. of France, Orbitolite marls in valley of Garonne, and glauconitic limestone, *Ech.* faunas; GROSSOUVRE (145) pp. 59, 60, 65, 67.
- Danian:—Stevens Klint, *Ech.*; GRÖNWALL (142) p. 371.—Jylland, *Ananchytes*, *Temnocidaris*; GRÖNWALL (143).—Seeland, bored spines [of a *Cidarid*]; GRÖNWALL (144).—Maestrichtian,—Trimmingham, Norfolk, spp. of *Cardiaster*, *Cidaris*, *Cyphosoma* [i.e. *Phymosoma*], *Echinoconus*, *Echinocorys*, *Phymosoma*, *Salenia*, *Stegaster*, *Goniaster*, *Ophiura*, *Bourgueticr.*, *Pentacr.* [i.e. *Isocr.*]; BRYDONE (51) p. 12.—Hachauer beds and Oberstdorfer sandstone, *Ananchytis*; REIS (279) p. 94.—Ürmös, Siebenbürgen, *Stenonia*, *Cardiaster*; SIMIONESCU (306) pp. 9, 35 [placed in Lower Senonian in Zool. Rec. 1899].
- Rancocas formation, New Jersey etc., spp. of *Pentacr.*, *Goniaster*, *Cidaris*, *Salenia*, *Pseudodiadema*, *Coptosoma*; CLARK (66) p. 339.
- Senonian:—Kent, *Zeuglopleurus rowei* n. sp.; GREGORY (137).—Near Dieulefit, Drôme, France, *Micraster*, *Echinocorys*, *Echinoconus*; PAQUIER (257) pp. 427, 430, 436.—Near Pribornow, Stettin, Prussia, spp. of *Bourgueticr.*, *Cidaris*, *Micraster*, *Echinocorys*, *Offaster*; SCHMIDT (301) p. cxviii.—Westphalia, also Meudon and Italy spp. of *Diplodetus* n. g., *Plesiaster*, and *Cardiaster*, see IV, c; SCHLUETER (299).—‘Nierenthalschichten,’ *Micraster* (pp. 3, 4), ‘Götzreuterschichten,’ *Echinocorys* (p. 18); REIS (278).—Portugal,—*Pomelia delgadoi*, n. g. et sp. of *Ech.*; LORIOL (207): grès à *Hoplites vari*

- var. *marroti*, *Ech.*; CHOFFAT (62) p. 228.—Sirab, Persia, *Hemiaster*; FRECH (124) p. 307.—Pjatigorsk, Caucasus, *Ananchytes*, *Galerites*; LEBEDEV (192) p. 31.—Matawan formation, New Jersey etc., *Hemiaster parastatus* (p. 330), Monmouth formation, *Catopygus pusillus*, *Cassidulus florealis* (p. 335); CLARK (66). Upper Senonian,—at Sorel (Eure), *Micraster*; FORTIN (114).—Zone of *Belemnitella mucronata*, at Gaillon (Eure), *Offaster*, *Echinoconus*, *Echinocorys*; FORTIN (113).—Rügen, *Cidaritis*, *Phymosoma*, *Salenia*, *Echinoconus*, *Pyrina*, *Ananchytes*, *Cardiaster*, *Micraster*, *Goniaster*, *Oph.*, *Pentacr.*, *Bourguetier.*, *Eugeniocr.*, *Antedon*; DEECKE (82) p. 71, & (83).—Finkenwalde, &c., Pomerania, *Ananchytes*, *Galerites*, *Cardiaster*, *Micraster*, *Holaster*, *Salenia*, *Cidaritis*, *Phymosoma*, *Pentacr.*, *Eugeniocr.*, *Bourguetier.*; DEECKE (82) pp. 55, 87, 90, 92, 94. Lower Senonian:—Chalk, Yorkshire, *Ech.* and *Marsupites* in Mortimer Museum; SHEPPARD (305) p. 67.—*Marsupites* zone of Brunswick, *Plesiaster*, *Cardiaster*, *Hemiaster*, *Ananchytes*, *Cidaritis*, *Phymosoma* d'Arch. (pp. 417–420), concurrence of *Uintacr.* and *Marsupites* at Recklinghausen (p. 418); SCHLUETER (297).—Niobrara Chalk, localities of *Uintacr.* in Kansas, with mode of its occurrence; BEECHER (27).—Rochester, Gravesend, and Croydon areas, England, spp. of *Bourguetier.*, *Ophiura*, *Oreaster*, *Micraster*, *Pentagonaster*, *Metopaster*, *Calliderma*, *Nymphaster*, *Cidaritis*, *Cyphosoma* [i.e. *Phymosoma*], *Echinocorys*, *Echinoconus*, *Micraster*, *Epiaster*, *Holaster*, *Cardiaster*; DIBLEY (92).—Elbthalgebirge, Saxony, spp. of *Catopygus*, *Micraster*, *Cidaritis*; PETRACZEK (265) p. 35.—Coniacian of Pont de Peille, Alpes-Maritimes, *Epiaster*, *Micraster*; RIAZ (281) p. 770.—Santonian age of beds at Abou-Roach near Gizeh containing *Echinobrissus waltheri* and other *Ech.*, not Turonian as R. B. Newton maintains; FOURTAU (120) p. 631: spp. of *Rhabdocidaritis*, *Salenia*, *Orthopsis*, *Cyphosoma abbatei*, *Holactypus excisus*, and n. spp. of *Echinobrissus*, *Hemiaster*; FOURTAU (115) pp. 17–24: *Hemiaster* aff. *fourneli*, *Rhabdocidaritis crameri*, *Echinobrissus waltheri*; BLANCKENHORN (36) p. 39.
- Senonian and Turonian:—off coast of Kent and Sussex, list of *Ech.*, *Ast.*, *Oph.*, and *Crin.* according to zones (pp. 361–363) with local details (passim) and special notes on spp. of *Cardiaster*, *Cidaritis*, *Cyphosoma*, *Discoidea*, *Echinoconus*, *Echinocorys*, *Epiaster*, *Glyphocyphus*, *Hemiaster*, *Micraster*, *Holaster*, *Salenia*, *Zeuglopleurus*, *Bourguetier.*, *Marsupites*, *Pentacr.*, *Uintacr.* (see IV, c, f); ROWE (288).—At Lewes, Sussex, *Micraster*, *Cidaritis*, *Echinocorys*, *Salenia*, *Holaster*, *Bourguetier.*; STRAHAN (322).
- Turonian:—of Rochester, Gravesend, and Croydon areas, England, spp. of *Bourguetier.*, *Pentacr.*, *Cidaritis*, *Cyphosoma* [i.e. *Phymosoma*], *Echinocorys*, *Echinoconus*, *Micraster*, *Holaster*; DIBLEY (92).—Saxony, faunal lists, *Ech.*, *Ast.*, *Crin.* in zones of *Inoceramus labiatus* and *I. brongniarti*; PETRASCHECK (266) passim. Upper Turonian,—Grislow Id., Pomerania, *Micraster*, *Ananchytes* (p. 36), Wollin Id., *Bourguetier.*, *Stellaster*, *Micraster*, *Infulaster*, *Holaster*, *Ananchytes*, *Cyphosoma*, *Cidaritis*, *Hol.*; DEECKE (82) p. 42.—*Cidaritis* spines among other fossils washed from now vanished Upper Turonian marls into the late Pleistocene loam of the former Kummerner See in Bohemia; MATOUSCHEK (227).—‘Weissenberger Pläner’ near Rynholec, N.W. of Prague, spine of *Cidaritis reussi*; ZELIZKO (364) p. 175.—Near Cracow, *Galerites*, *Holaster*; WISNIOWSKI (359) p. 241.—Portugal, *Trochodiadema abramense* n. g. et sp. of *Ech.*; LORIOU (207).
- Turonian and Cenomanian:—Portugal, *Ech.*; CHOFFAT (62) pp. 150, 155, 159, 163, 166, 172, 179, 185, 192, 193, and scattered

through previous pp.—Couche à *Ostrea columba*, at Mondégo, *Anorthopygus*; CHOFFAT (61) & (62) p. 199.—Calcaire oolitique à *Anorthopygus*, at Mondégo, *A. michelini*, *A. orbicularis*; CHOFFAT (61).—Turonian age of beds at Abou-Roach near Gizeh, containing *Cyphosoma abbatei* and *Periaster roachensis*, not Cenomanian as Blanckenhorn maintains; FOURTAU (120) p. 630: *P. roachensis* n. sp. perhaps = the *Hemiasterourneli* often quoted from this loc.; FOURTAU (115) p. 24.

Cenomanian:—of Rochester, Gravesend, and Croydon areas, England, spp. of *Discoidea*, *Pseudodiadema*, *Holaster*; DIBLEY (92).—S. Dauphiné, France, *Discoidea*, *Holaster*, *Pseudananchys* (hitherto known only from Spain and Algeria); PAQUIER (257) p. 402.—Les Moulins, Alpes-Maritimes, *Holaster*; RIAZ (281) p. 768.—Urschelau, Bavarian Alps, *Discoidea*; SOEHLE (311) p. 41.—Near Cracow, *Cidaris*, *Discoidea*; WISNIOWSKI (359) p. 240.—Silberbachthal, S. of Hermannstadt in Siebenbürgen, *Cidaris*, *Holaster*; BLANCKENHORN (38) p. 25.—‘Hellkofener Mergel’ (= Priesener Schichten), *Cidaris*, *Antedon*; BRUNHUBER (50).—Brancalcione in Calabria, *Hemiaster*, *Epiaster*; DE STEFANO (90) p. 31.—Cenomanian with *Holactypus cenomanensis* and *Hemiaster pseudo-fourneli* at Gebel Galala el Baharieh, Egypt, supposed Senonian by Schweinfurth, 1887; FOURTAU (119).—Beharieh Oasis, Egypt, n. spp. of *Cidaris* and *Rhabdocidaris*; FOURTAU (115) p. 6.—W. coast Red Sea, Galala and Arabian deserts, *Hemiaster cubicus* (pp. 28, 37); Libyan desert, *H. lusitanicus*, *Cyphosoma abbatei*, *Heterodiadema libycum*, *Diplopodia marticensis*, *Linthia oblonga*, *Claviaster cornutus*, *Echinobrissus* (pp. 34, 36, 38); Sinai, Arabian desert, Beharije Oasis, Abu Roash (table, p. 33): BLANCKENHORN (36). [See also under Turonian.]

Lower Cenomanian, —Upper Greensand, zone of *Pecten asper*, Warminster, Wilts., characteristic *Ech.* (p. 68, figg. 44–46), Warminster beds generally, list of *Ech.* and *Crin.* (p. 246), ‘gaize’ of Devizes, *Ech.* (p. 258), of C. la Hève, *Ech.* (p. 399), of England generally, *Ech.*, *Ast.*, *Crin.* (p. 477); JUKES-BROWNE (169).  
Vraconian and Albian:—Red Chalk,—of Yorkshire wolds and Speeton, *Ech.*, *Crin.*; JUKES-BROWNE (169) p. 314.—Goulceby, Lincs., *Pentacr.*; CARTER (57).—Vraconian near Uzès (Gard), n. spp. of *Epiaster* and *Catopygus*; LORIOU (207).—Upper Gault of England, *Ech.*, *Crin.* (pp. 60, 477), Lower Gault of England, *Ech.*, *Crin.* (pp. 52, 477), Gault of Wissant, N. France, *Ech.* (p. 381), zone of *Ammonites inflatus* in Aube, Marne, and Ardennes, *Ech.* (p. 394); JUKES-BROWNE (169).—Phosphatic bed near Rencurel (Isère), *Diplopodia*, *Tylocidaris*, *Peltastes*, *Discoidea*, *Echinoconus*, *Catopygus*, *Caratomus*, *Hemiaster*, *Holaster*; KILIAN & LORY (170) p. 60.—Gault of Eze, Alpes-Maritimes, *Epiaster*, *Discoidea*, *Conulus*, *Holaster*; RIAZ (281) p. 769.—Albian, Matmatas, Algeria, *Toxaster* and *Crin.* fragments; FICHEUR (108) p. 564.

## 2. Lower:—

Breccia near Ste. Croix (Jura Vaudois), *Toxaster*; DOUXAMI (95) p. 419.

Comanche series, Fort Worth Limestone near San Felipe Springs, and Washita Limestone near Chispa, Rio Grande, Texas, *Enallaster*; VAUGHAN (336) pp. 16, 84.

Aptian:—“Couches à Orbitolines supérieures” Le Rimet, Les Ravix (Isère), *Salenia*, *Stomechinus*, *Tiaromma*, *Diplopodia*, *Cidaris*, *Stereocidaris*, *Phymosoma*, *Goniopygus*, *Codiopsis*, *Psammechinus*, *Magnosia*, *Pedinopsis*, *Orthopsis*, *Codechinus*, *Pygaulus*, *Holaster*, *Toxaster*, *Heteraster*, *Echinobrissus*, *Clypeopygus*, *Pyrina*, *Discoidea*, *Echinoconus*, and *Pentacr.*; KILIAN & LORY (170) pp. 56, 57.—Vaucluse,



n. sp. of *Cidaris*, Barcelona, n. sp. of *Antedon*; LORIOLE (207).—(Lower) Matmatas, Algeria, *Epiaster*, *Salenia*, *Holactypus*, *Pseudodiadema*, *Toxaster*, *Enallaster*; FICHEUR (108) pp. 566–574, & (109).—Aptian? of Oued Cherf, *Epiaster restrictus* and *Cidaris* cf. *jullieni*; BLAYAC (39) p. 960.

Barremian:—"Couche à Orbitolines inférieure" vallée de la Bourne (Isère), *Cidaris*, *Stereocidaris*, *Hemicidaris*, *Goniopygus*, *Echinobrissus*, *Pygaulus*, *Heteraster*; KILIAN & LORY (170) p. 53.—Barremian (?) of La Turbie, Alpes-Maritimes, *Toxaster*; RIAZ (281) p. 766.

Neocomian:—Mt. Dealu Sasului, N.E. of Podu Dimbovitzei, Roumania, *Cidaris punctatissima*; POPOVICI-HATZEG (269) p. 550.—Karabagh, Caucasus, *Toxaster*; LEBEDEV (192) p. 15.—Urgonian, Hauterivian, and Valanginian of Portugal, revised list of *Ech.*; CHOFFAT (62) p. 184. Hauterivian,—near Choranche (Isère), *Ech.*, *Cidaris*, *Toxaster*, *Pseudodiadema*, *Rhabdocidaris*, *Rachiosoma*, *Pyrina*, *Cardiolampas*, *Dysaster*, *Asterias*, *Eugeniocr.*, *Pentacr.*, *Cyclocr.*; KILIAN & LORY (170) pp. 47, 48, 52. Valangian,—Aizy-sur-Noyarez, *Collyrites*, *Cardiolampas* (p. 15), Mallevall, Alpes françaises, *Cidaris*, *Rhabdocidaris*, *Holactypus*, *Cardiolampas*, *Dysaster*, *Holaster*, *Pyrina*, *Pygurus*, and *Pentacr.* (p. 50), "couches du balcon de l'Echaillon" Alpes françaises, *Pyrina*, *Cidaris*, *Goniopygus*, *Millericr.* (p. 37); KILIAN & LORY (170).—Neocomkieselkalk, Acherbrücke bei Stansstad, Switzerland, Spatangids, esp. *Toxaster retusus*, and above it an Echinoderm breccia of Hauterivian age; TOBLER (329) p. 145.—Valangin near Neuchâtel, faunal lists, spp. of *Pseudodiadema*, *Holactypus*, *Psammechinus*, *Toxaster*, *Pygurus*, *Phyllobrissus*, *Collyrites*, *Pyrina*, *Cidaris*, *Rhabdocidaris*; BAUMBERGER & MOULIN (23) pp. 159, 166, 167, 171, 176, 190, 200.

c. **Jurassic**:—Catalogue raisonnée of spp. of *Pentacr.* [i.e. *Isocr.*], *Extracr.*, *Balanocr.*, *Cyclocr.* [i.e. *Acrochordocr.*], *Apiocr.*, *Millericr.*, *Eugeniocr.*, *Phyllocr.*, *Tetracr.*, and *Antedon*, found near Mâcon, France, in Bajocian, Bathonian, Callovian, Oxfordian, Rauracian, and Kimmeridgian; LISSAJOUS (195).—From Inf. Oolite to Kelloway,—Brauner Jura of N. Swiss Jura Mts., *Sowerbyi* beds, Aargau, *Galeropygus* (p. 302), *Humphriesi* beds, *Rhabdocidaris* (p. 306), Hauptrogenstein, *Clypeus* (p. 310), Movellier beds, *Hemicidaris* (p. 312), *Ferrugineus* oolite, *Clypeus*, *Echinobrissus*, *Holactypus* (p. 315), *Varians* beds, list of *Ech.* (p. 320), *Macrocephalus* beds, *Holactypus*, *Collyrites* (p. 324); MUEHLBERG (236).—Near Cracow, *Clypeus*, *Collyrites*, *Holactypus*; WISNIOWSKI (359) p. 232.

Freeze-out hills, Wyoming, *Pentacr.*, *Asterias*; LOGAN (205) pp. 113, 119, 130.—Shirley stage, Wyoming, *Pentacr.*; KNIGHT (174) p. 386.

# 1. Upper:—

Karabagh, Caucasus, *Apiocr.*; LEBEDEV (192) p. 16.

Portlandian (=Tithonian):—Bononian of Angoulême, *Hemicidaris*, *Echinobrissus*; GLANGEAUD (131).—"Brèche à *Cidaris glandifera* d'Aizy," *Cidaris*, *Rhabdocidaris*, *Diplocidaris*, & *Eugeniocr.* (p. 15), calcaire récifal d'Echaillon, Alpes françaises, *Cidaris*, *Diplocidaris*, *Rhabdocidaris*, *Dysaster*, *Grasia*, *Millericr.*, *Eugeniocr.* (p. 33); KILIAN & LORY (170).—Lombardy, *Collyrites*, *Metaporhinus*; MARIANI (222) p. 409.—(Upper) Mt. Dealu Sasului, N.E. of Podu Dimbovitzei, Roumania, *Cidaris glandifera*; POPOVICI-HATZEG (269) p. 550.

Malm near Liestal, Switzerland, various locc., spp. of *Collyrites*, *Cidaris*, *Hemicidaris*, *Acrocidaris*, *Glypticus*, *Dysaster*, *Pygurus*, *Asterias*, *Balanocr.*, *Pentacr.* [i.e. *Isocr.*], *Apiocr.*, *Eugeniocr.*; HUENE (166) pp. 350–365.



- Kimmeridgian:—Pomerania, *Echinobrissus*, *Pseudodiadema*, *Cidaris*, *Hemicidaris*, *Holectypus*, *Pygurus*; DEECKE (82) p. 24.
- Sequanian:—Gialdessa a Graslej, Harrar, E. Africa, *Hemicidaris abyssinica*; ANGELIS D'OSSAT & MILLOSEVICH (16) p. 156.—Corallian, Teutoburger Wald, *Cidaris*; STILLE (319) p. 17.
2. Middle:—
- Oxfordian, Corps-de-Garde, Neuchatel, *Balanocr.*; ROLLIER & TRIBOLET (284). (Middle) "sphérites de la Croix," Switzerland, *Millericr.*, *Collyrites*, *Holectypus*, *Pseudodiadema*, *Goniaster*, *Cidaris* (p. 209), Rouges-Terres, *Balanocr.* (p. 214); KOBY (177).—Bernese Jura, *Cidaris*, *Pseudodiadema*, *Balanocr.*; LORIOL (206) p. 182. (Lower) Liesberg, Switzerland, *Millericr.*, *Cyclocr.* (p. 196), Châtillon, *Asterias*, *Balanocr.* (p. 200); KOBY (177).
- Callovian:—near Winckel, Ferrette, France, *Rhabdocidaris*, *Collyrites*; BLEICHER & MIEG (40).—Combe-Noire (Indre), *Collyrites*, *Echinobrissus*; BENOIST (31) p. 6.
- 2, 3. Callovian or Bajocian of Franz Josef Land, *Pentacr.* aff. *bajociensis*; POMPECKJ (268) pp. 51, 120.—Callovian or Bathonian, Bihendula, S. of Berbera, Somaliland, n. sp. of *Pseudodiadema*; GREGORY (136) p. 41.
3. Lower:—
- Sundance formation of S. Dakota, *Asterias dubium* [sic, ? a mistake in genus, as it is by implication a Mollusc] and *Pentacr. asteriscus*; DARTON (79) p. 388.
- Bradfordian near Chateauxroux (Indre) *Hemicidaris*; BENOIST (31) p. 5.
- Bathonian:—Dept. de l'Indre, France, numerous *Ech.*; BENOIST (31) pp. 3, 4.—Near Belfort (Haute-Saône) n. sp. of *Hemipedinia*; LORIOL (207).—*T. maxillata* beds near Dormach, *Cidaris koechlini* (p. 301), Upper Bathonian, *Discoidea* marl, and *Clypeus sinuatus* (p. 303); TOBLER (328).—Hauptrogenstein, zone of *Stephanoceras blagdeni*, near Liestal, Switzerland, Echinoderm-breccia with crowns of *Cainocr.* [i.e. *Isocr.*] *andreae*; HUENE (166) p. 347.
- Vesulian or ? Bajocian of St. Gaultier (Indre), coral-reef with spp. of *Cidaris*, *Hemicidaris*, *Asterocidaris*, *Pseudodiadema*, *Stomechinus*, and n. spp. of *Diplocidaris*, *Gymnocidaris*, *Pseudodiadema*, and *Phymechinus*; LAMBERT (186).
- Bajocian:—near Argenton, *Pygaster*, *Pseudodiadema*; BENOIST (31) p. 3.—Zones of *Sonn. sowerbyi*, *Sph. sauzei*, and *Steph. humphriesi* near Basle, spp. of *Cidaris*, *Rhabdocidaris*, *Pseudodiadema*, *Hemipedinia*, *Pedinia*, *Collyrites*, *Pentacr.*, *Crenaster*; GREPPIN (138) pp. 186–192, 200, 202.—*Humphresianus* beds, Blauengebiet, *Cidaris* and *Rhabdocidaris* spp.; TOBLER (328) p. 291.—Zone of *Sonninia sowerbyi* near Basle, *Rhabdocidaris*, *Cidaris*, *Pentacr.*, *Cyclocr.*; STRUEBIN (324) p. 337.
- d. Lias:—Catalogue raisonnée of spp. of *Pentacr.* [i.e. *Isocr.*], *Extracr.*, *Balanocr.* found near Mâcon, France, in Hettangian, Sinemurian, Charmouthian, and Toarcian; LISSAJOUS (195).—Lias of l'Yonne, spp. of *Miocidaris*, *Plegiocidaris*, *Rhabdocidaris*, *Cidaris*, *Eodiadema*, *Diademopsis*, *Diadema*; also general discussion of *Ech.* of this age and older, with n. spp. of *Mesodiadema* and *Eocidaris*, and numerous n. genn.; LAMBERT (187).—Lias, Laila Mts., Caucasus, *Pentacr.* [wrongly supposed early Tertiary]; BONNEY (43) p. 226.
- Domerian of Brescia, spp. of *Pentacr.*, *Cidaris*, and *Polycidaris*; BETTONI (34) pp. 8–11.
- Zone of *Amm. margaritatus*, Lincoln, *Ophioderma* and *Pentacr.*; WALTON (346).—"Amaltheenthon" in Teutoburger Wald, *Cidaris*,

- Pentacr.*; STILLE (319) p. 13.—Lias  $\delta$  near Reutlingen, Württemberg, *Eugeniocr.*, *Cotylederma*, *Pentacr.*, *Cidaris*, *Microdiadema*; ZWIESELE (370) p. 20.
- Lower or Sinemurian,—Central Appenines, *Cidaris* spp. and *Diademopsis*; MORENA (233).—Valesacca in E. Carpathians, *Pentacr.*; UHLIG (334) p. 9.—Zone of *Ammonites capricornus* in Teutoburger Wald, *Pentacr.* (p. 13), beds with *Arietites oblique-costatus* in Teutoburger Wald, *Pentacr.* (p. 9); STILLE (319).
- Hettangian or Infra-Lias, "Pylonoten-thon," near Nellingen in Schwaben, *Cidaris*, *Pentacr.*; ENGEL (106) p. 240.—Zone of *Psiloceras planorbe* in Teutoburger Wald, Prussia, *Pentacr.*, *Cidaris*; STILLE (319) p. 7.
- Rhaetic sandstone near Nürtingen in Schwaben, *Ophioderma*; ENGEL (106) p. 242.
- e. **Trias**:—Bear Id. near Spitzbergen, *Ech.* quoted from Boehm; ANDERSSON (12).—Near Gereuth, Krain, Austria, *Cidaris* and *Encrinurus*; KOSSMAT (184) p. 90.—Province Kwei-tschou, China, *Entrochus rotiformis* n. sp.; KOKEN (182) p. 212.
- Upper:—Upper Cassian of Falzarego Valley, S. Tyrol, spp. of *Cidaris* and columnals of *Encrinurus* and *Pentacrinus*; OGILVIE GORDON (132) p. 339 & (249) p. 309.—St. Cassian Limest., near Idria, Krain, Austria, *Encr. cassianus*; KOSSMAT (184) p. 95.—Betw. St. Cassian and Raibler beds, 'Pachycardientuffe der Seiser Alp in Tirol', spp. of *Encrinurus*, *Pentacr.*, and *Cidaris*; BROILI (48) p. 369: spp. of *Encrinurus* and *Cidaris*; ZITTEL (368) p. 349.
- Middle:—Partnach-schichten, Labergebirg, Bayern, *Cidaris*; SOEHLE (311) p. 2.—Muschelkalk,—of Jukbühel, N. of Kötschach, Carinthian Alps, *Encrinurus*; GEYER (126) p. 120.—Of Mte. Presolana, Lombardy, *Encrinurus*; MARIANI (223) p. 1254.—(Lower) near Recoaro in Vicentin, *Dadocrinus gracilis* beds, with *Millericr.*, *Ophioglypha*, *Aspidura* (p. 97), Brachiopod limestone, with *Encrinurus*, *Pentacr.*, *Cidaris* (p. 101); TÖRNQUIST (330).—"Trias moyen—marbre grisâtre de Mong-Tze (Yun Nan). *Encrinurus liliiformis*? articles de la tige"; DOUVILLÉ (94) p. 595.

## (iv) PALAEOZOIC.

- a. **General**:—Synopsis of Palaeozoic *Asteroidea*, with distrib.; STUERTZ (325) p. 206.—Lower Palaeozoic, Bohemia,—list of *Cyst.* after Barrande but revised according to Jaekel's classification and nomenclature; PERNER (261): distribution of *Crin.*, *Scyphocr.*, *Mariacr.*, *Abacocr.*, *Bohemiocr.*, *Beyrichocr.*, *Laubeocr.*, *Caleidocr.*, and *Ichthyocr.*; BATHER (21) pp. 102, 119.
- b. **Permian**:—Djulf beds, Araxes gorge, Armenia, *Cyathocr.*, *Poteriocr.*?; FRECH (124) p. 285.—Greyish Marble of Yunnan-Y, near Ta Li Fou, China, *Crin.* columnals; DOUVILLÉ (94) p. 593.
- c. **Permo-Carboniferous**:—N. W. of Asia Minor, Tschamlyk of Tschobanoghlu near Tsinarli Tsesme, columnals of *Poteriocr. quenstedti* (p. 93), Ari Maghara, *Crin.* (p. 94); ENDERLE (105), pl. viii.
- d. **Coal Measures**:—Black marble, near Hai-Phong, China, *Pentremites*; DOUVILLÉ (94) p. 593.
- Cottonwood formation, Nemaha co., Neb., *Fusulina* limest., *Archaeocidaris* spines (pp. 5, 6, 7), *Crin.* columnals (p. 7); Wabaunsee formation, Dunbar, Neb., *Zeacr.*? *mucrospinus*, *Archaeocidaris*, *Crin.* columnals (p. 153), Cass co., Neb. *Z.*? *mucrospinus*, *Crin.* col. (pp. 155, 157, 161, 165), *Archaeocidaris* (pp. 157, 165, 166), *Sca-*

*phiocr. hemisphaericus* (p. 163); PROSSER (272).—Coal-Measures, Kansas, *Scaphiocr.*, *Zeacr.*, *Ceriocr.* [i.e. *Delocr.*], *Phialocr.* [i.e. *Aesiocr.*], *Erisocr.*, *Eupachyr.*, *Hydreionocr.*, *Agassizocr.*, *Archaeocidaris*, *A. agassizi*, which is a Burlington sp., *Oligoporus*; BEEDE (29) pp. 26–50.—Upper,—Kansas, n. spp. of *Scaphiocr.*? and *Zeacr.*?; BEEDE (28).—Above Lehigh coal,  $\frac{1}{4}$  mile W. of Krebs station, Indian Territory, U. S. A., *Eupachyr.*; GIRTY (130) pp. 542, 575. Lower,—Atoka quadrangle, Indian Territory, U. S. A., *Eupachyr.*; GIRTY (130) pp. 545, 573.

#### e. Lower Carboniferous:—

Millstone Grit near Abergavenny, S. Wales, *Crin.*; STRAHAN & GIBSON (323) p. 47.

Lists of fossils from the various limestones, coast of Northumberland, *Crin.* and *Archaeocidaris* (pp. 83–89) *Hol.*, *Ech.*, *Crin.* (pp. 123, 131); SHARMAN & NEWTON in GUNN (147).—Lancashire, *Brahmacr.* n. g.; SOLLAS (312).—Viewforth, Fife, *Archaeocidaris* sp. and *Crin.* stems; KIRKBY (172) p. 490.—Lower and Upper Limestone, numerous localities in Fife, *Hydreionocr.*, *Platycr.*, *Poteriocr.*, *Astrocr.*, *Archaeocidaris*, *Chiridota*, *Anchistrum*; PEACH (260) pp. 222, 223, 244, 247, 248, 249.—Calcareous sandstone,—near Arbigland, Kirkcudbright, Scotland, *Archaeocidaris*, *Crateriocr.*; PEACH (259) p. 65.—Fife, *Hydreionocr. globularis*, *Archaeocidaris* sp.; PEACH (260) pp. 223, 241.—Zone of *Spirifer tornacensis*, Arpatschai valley, Armenia, *Platycr.*, *Pachylocr.*, *Pentremites*; FRECH (124) p. 204.

Carboniferous?, Timor in drift, *Granatocr.* and *Crin.* columnals; BOEHM (41) p. 555.—W. Australia, *Actinocr.*, *Platycr.*, *Poteriocr.*, and *Pentremites* at Kimberley, *Cyathocr.* and *Poteriocr.* at Gascoyne R.; MAITLAND (217) pp. 14, 15.

Warsaw? (St. Louis) Limestone of Missouri, n. spp. of *Orbitremites* and *Pentremites*; ROWLEY (289).

Keokuk or Knob Limestone, near Salem, Ind., n. sp. of *Actinocr.*; WHITFIELD (350).

Burlington Limestone,—of Missouri, n. spp. of *Dorycr.*, *Batocr.*, *Eretmocr.*, *Agaricocr.*, *Codaster*, *Orbitremites*; ROWLEY (289).—Louisiana, Mo., list of *Blast.*, *Cactocr. obesus* is from Upper not Lower (p. 251); ROWLEY (291).—Iowa, *Majesticrinus* [sic] and *Stroctinus* [sic]; ORCUTT (252).

Kinderhook at Northview, Webster co., Missouri, *Crin.* columnals; WELLER (347).

Chouteau Limestone, Missouri, list of *Blast.*; ROWLEY (291) p. 250.

#### f. Devonian:—

List of historical specimens of Devonian *Ast.*, *Crin.*, *Blast.*, *Cyst.* in Amer. Mus. Nat. Hist., with corrected horizons and localities; WHITFIELD & HOVEY (351) pp. 96–200.—Devonian (or Silurian, or Carboniferous) at Vallcarca and Putxet near Barcelona, “Phyllades avec *Encrinus*”; ALMERA (9) p. 750.—Devonian, Cornwall,—W. of Newtown B., *Scaphiocr.*? (p. 146), Bedruthan Steps, *Sphaerocr.*, *Crin.* columnals (p. 147), Mother Ivey’s B., *Crin.* col. (p. 146); Fox (121), and (122) pp. 346, 347, 351, 352, see also pp. 357, 358. Upper,—*Protaster* said by Destinez (71) Zool. Rec. 1899 to come from Assise d’Esneux is really from Assise de Souverain-Pré; DESTINEZ (91).

Middle,—Marzysz and Nowa Wies, Poland, *Crin.*; GUERICH (146) p. 378.

Lower,—Bundenbach, *Palaeosolaster*, *Echinasterias*, *Echinodiscus*, *Echinostella*, *Jaekelaster*, n. genn. of *Ast.*: STUERTZ (325) pp. 225–236.

Portage sandstone, Naples, N. Y. *Paropsonema*; CLARKE (68).



Middle,—Wapsipinicon stage, Upper Davenport beds, *Calceocr.*, *Megistocr.*, *Stereocr.* spp.; NORTON (248) p. 451.

Lower,—Oriskany of Becraft Mt., N. Y., *Edriocr.* *becraftensis* n. sp. (p. 62), elsewhere in N. Y., distrib. of *E. sacculus* (pp. 74, 75, 76); CLARKE (67).—Oriskany, distrib. of Echinoderm fauna, spp. of *Edriocr.*, *Homocr.*, *Technocr.*, and *Anomalocystis*; SCHUCHERT (303) pp. 292, 313.—Oriskany limestone, Peter's Valley, Sussex co., N. J., *Edriocr.*; WELLER (349) p. 43.—New Scotland beds, *Spirifer perlamellosus* zone, Nearpass, Sussex co., N. J., *Lecanocr.*; WELLER (349) p. 33.

g. **Silurian**:—Lists of genera and spp. of *Crin.* with geogr. distrib.; WELLER (348) pp. 47–56: criticism of these lists, with special reference to England and Scandinavia, and of the geological conclusions based on them; BATHER in Review.—Czerwona Gora, Poland, *Scyphocr.*; GUERICH (146) pp. 368, 373.—Oesel, Scania, and Britain, *Lagaroocr.*; JAEKEL (168).

Wenlock Limest., England, *Cicerocr.* n. g.; SOLLAS (312).—England, occurrence of *Arachnoocr.*, *Calliocr.*, *Calpiocr.*, *Cordylocr.*, *Desmidocr.*, *Hapaloocr.*, *Lyriocr.*, *Mariacr.*, *Patellioocr.*, *Pycnosaccus*, and *Stephanocr.*; BATHER in Review of WELLER (348).

Graptolithen-Schiefer des Steinboß bei Mölscheid, also *Cardiola*-Schichten des Steinhornes, *Crin.*; DENCKMANN (88) p. 151.

Llandovery of Gembloux, Belgium, *Sphaeronis*; MALAISE (219) p. 197.

Lower Helderberg, —here called Helderbergian and assigned to Lower Devonian, distrib. of Echinoderm fauna and discussion of its value for stratigraphic correlation, spp. of *Homocr.*, *Melocr.*, *Corymbocr.*, *Mariacr.*, *Cordylocr.*, *Marsupioocr.*, *Herpetocr.*, *Edriocr.*, *Aspidocr.*, *Hadrocr.*, *Camarocr.*, *Lepadocr.*, *Sphaerocystis*, *Anomalocystis*, and *Protaster*; SCHUCHERT (303) pp. 277, 279.—N. Y., character of *Crin.* and *Cyst.*, *Coronocr.*, *Cordylocr.*, *Camarocr.*, *Brachioocr.*, *Aspidocr.* said to be confined to it; CLARKE (67) pp. 86, 91.—Delthyris Limestone of Missouri, n. sp. of *Troostocr.* and *Stribalocystis*; ROWLEY (289).—Square Lake, Maine, *Lyriocr.*; WILLIAMS (352) p. 55.

North Haven series of Penobscot Bay, Maine, *Ichthyocr.*, *Eucalyptocr.*; BEECHER in SMITH (310) p. 22: quoted by WILLIAMS (352) p. 36.

—Upper Niagara. The distribution of *Crin.* in the sea extending from N. Europe, by the Arctic regions, to the Mississippi valley, with special discussion of the Chicago fauna, and description of spp. of *Cyathocr.*, *Botryocr.*, *Ampheristocr.*, *Myelodactylus*, *Thysanocr.*, *Cyphocr.*, *Gazacr.*, *Lampteroocr.*, *Siphonocr.*, *Lyriocr.*, *Macrostyloocr.*, *Melocr.*, *Eucalyptocr.*, *Calliocr.*, *Chicagoocr.* (n. g.), *Periechoocr.*, *Marsupioocr.*, *Platyoocr.*, *Ichthyocr.*, *Lecanocr.*, *Stephanocr.*, *Zophocr.*, also of *Archaeocr.* previously known only from Trenton Limestone, and *Corymbocr.*, *Crotaloocr.*, and *Pycnosaccus* previously unknown from America; WELLER (348).—Chicago canal excavations disclosed 60 spp. of *Crin.* some only found elsewhere in England and Sweden; RADDIN (276) pp. 307, 308.—Niagaran,—of N. Y., list of *Crin.* and *Cyst.* said not to pass up to Helderbergian; CLARKE (67) p. 93.—Hamilton, Ont., list of *Crin.* and *Cyst.*; GRANT (134) p. 130.—Missouri, n. sp. of *Stribalocystis*; ROWLEY (289).—Gower stage at Cowles quarry, Big Rock, Scott co., Ia., *Siphonocr.*, *Eucalyptocr.* spp.; NORTON (248) p. 438.—Niagara shales, Grimsby near Hamilton, Ont., *Stephanocr.*, *Caryocr.*, *Lyriocr.*; GRANT (133).

Clinton or Niagara at New Sweden, Maine, *Caryocr.*; WILLIAMS (352) p. 51.



- Clinton group, Hamilton, Ont., *Palaeaster*, *Eucalyptocr.*, *Glyptocr.*;  
GRANT (134) p. 134.—Kentucky, D. D. Owen's identification of  
*Glyptocr. plumosus*, in 1857, criticised; FOERSTE (112) p. 72.
- h. **Ordovician**:—Crinoid [or Cystid] limestone found near Sulitelma  
in Lapland; SJÖGREN (309).—Near Mojeza, Poland, *Cyst.*; GUERICH  
(146) pp. 368, 370.—Fauquez in Brabant, Belgium, *Echinosphaera*  
*munita*, *Sphaeronis punctatus*; MALAISE (219) p. 200.
- Caradoc:—Sambre-et-Meuse, Belgium, *Glyptocr.*, *Echinosphaera*,  
*Sphaeronis*; MALAISE (218) p. 806: *Echinosphaera baltica*, *Sphae-*  
*ronis stellulifera*, *Glyptocr.*, *basalis*; MALAISE (219) p. 205.—  
Gembloux, Belgium, *Sphaeronis* (vel. *Echinosphaera*) *stellulifera*;  
MALAISE (219) p. 196.—Assise à Cystidés, Montcada, near Barce-  
lona, *Echinosphaera*, overlaid by "Calcaire griotte à *Encrinus*";  
ALMERA (8) p. 733-735 and (9) p. 743.
- Chasmopskalk near Loke in Lockne, Jemtland, *Caryocystis*; WIMAN  
(356).
- Bed d 4 at Staňkovka, S.S.W. of Radotín, Bohemia, spp. of *Aristo-*  
*cystis* and *Craterina*; ZELIZKO (366) p. 90.
- Jewe beds in Miocene drift, Sylt Id., *Cheirocr.*, *Echinosphaera*;  
STOLLEY (321) p. 31.
- Grès à *Calymene tristani*, Anse de Vauville, Manche, *Asocrinus*;  
BIGOT (35).
- Trenton and Hudson R. periods in Minnesota, list of spp. of  
*Dendrocr.*, *Merocr.*, *Palaeocr.*, *Glyptocr.*, *Porocr.*, *Carabocr.*, *Cremaer.*,  
*Pleurocystis*, *Eurycystis*, *Glyptocystis*, *Palaeaster*, *Edrioaster*, *Age-*  
*lacr.*, *Lichenocr.*, *Cyclocystoides*; WINCHELL & ULRICH (357)  
p. cxxiii.—Trenton Limestone of Silliman's Fossil Mt., Baffin  
Land, *Lichenocr.* and n. sp. of *Porocr.*; SCHUCHERT (302) p. 155.
- Black R. group, Rockton, Ill., Wisconsin, and Kentucky, *Agelacr.*  
*marginatus*; WINCHELL & ULRICH (357) pp. xcv, xevi.
- Lower Ordovician, Calcareous of Fort Hunter, N.Y., *Crin.* or  
*Cyst.* stem and plates; CLELAND (69) p. 19, pl. xvi.
- k. **Cambrian**:—Middle,—of Jinec., Bohemia, *Lichenoides*, *Mitrocystis*,  
*Lapillocystis*; ZELIZKO (365).

## IV. SYSTEMATIC†.

### (A.)—ECHINODERMA IN GENERAL.

General systematic account; ECKSTEIN (102) pp. 221-227.

Echinodermes classified as: Class, Anangiens, with Orders, Ophiurides,  
Asterides; Class, Angiophores, with Orders, Crinoïdes, Echinides,  
Holothurides; ACLOQUE (1).—Revised diagnosis of *Echinoderma*, and  
discussion of the division into Classes: *Cyst.*, *Blast.*, *Crin.* and *Edrio-*  
*asteroidea*, which are *Pelmatozoa*, also *Hol.*, *Ech.*, and *Stelleroidea*,  
which are *Eleutherozoa*; BATHER (19) pp. 32-35.—*Echinoderma*

† A dagger prefixed to the trivial name of a species indicates that it is fossil;  
prefixed to the name of the author, it denotes that the reference is to the species in  
a fossil state; prefixed to the name of a genus, it indicates that all species of the  
genus here recorded are fossil, and the † is therefore not repeated before each  
name. The abbreviations *l. c.* and *op. cit.* refer only to the place or work quoted  
immediately before.

A name and reference quoted without further statement [*e.g.* *Ankyroderma danielsen-*  
*seni*; PERRIER (264)] indicate that the quoted author's statement refers merely to  
locality or some question of slight importance. Further information can usually  
be gleaned from the cross-references under TITLES.

divided into five Classes: Holothurides, Pelmatozoaires, Echinides, Asterides, Ophiurides; CUÉNOT (74) p. 437.

*Asteroidea*, vide sub *Ophiuroidea*.

*Edrioasteroidea*, though maintained as an independent Class by BATHER (19) and elsewhere, are in this Record dealt with under Cystidea (iv, c).

*Eleutherozoa*, grade of *Echinoderma*, diagnosis, divided into Classes, *Holothuroidea*, *Stelleroidea*, *Echinoidea*; BATHER (19) p. 217.

*Ophiuroidea* cannot be united in a Class with *Asteroidea*, since the resemblance is strictly superficial, and they differ from them as much as from any other Class of Echinoderms; HAMANN (148) pp. 746, 748.—No essential difference from *Asteroidea*, with which therefore they are united as *Stelleroidea* (q.v.); GREGORY in BATHER (19).—Related to *Ech.* rather than to *Ast.*, because of similar *Pluteus*, and alleged direct development in *Oph.* as in *Ech.* [!]; APOSTOLIDÉS (17) p. 325.

*Pelmatozoa*, diagnosis, relations of Classes, *Cyst.*, *Blast.*, *Crin.* and *Edrioasteroidea*; BATHER (19) p. 38.

*Stelleroidea*, Class of Echinoderma, with Sub-classes, *Asteroidea* and *Ophiuroidea*, discussion and diagnosis; GREGORY in BATHER (19) pp. 237–239.

*Thecoidea* Jaekel, vide *Edrioasteroidea*.

#### (B.)—HOLOTHURIOIDEA.

*Holothurioidea* diagnosed and divided into Orders, *Actinopoda* and *Paractinopoda*, general account; GOODRICH in BATHER (19) pp. 218 et sqq.

*Acanthotrochus*; GOODRICH in BATHER (19) p. 234. *A. mirabilis*, geogr. and bathymetric distrib.; LUDWIG (209) p. 168.

+*Achistrum* [nonnunquam *Anchistrum*, sed melius *Ancistrum*] *nicholsoni*; PEACH (260) p. 223.

*Achlyonice*; GOODRICH in BATHER (19) p. 229.

*Actinocucumis*; GOODRICH in BATHER (19) p. 230.

*Actinopoda*, Order, diagnosed and divided into families, *Holothuriidae*, *Cucumariidae*, *Molpadidae*, *Elpidiidae*, and *Pelagothuriidae*; GOODRICH in BATHER (19) p. 227.

*Actinopyga miliaris*; ANDREWS (13) p. 117.

*Anapta*; GOODRICH in BATHER (19) p. 234.

*Ancistrum*, vide *Achistrum*.

*Ankyroderma*; GOODRICH in BATHER (19) p. 233, fig. i. *A. danielsseni*; PERRIER (264) p. 119. *A. jeffreysi*; LUDWIG in DOEDERLEIN (93) p. 229: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 162. *A. maroccanum* [sic], n. sp. off Morocco; *A. loricatum*, n. sp. coasts of Spain: PERRIER (264) p. 119.

*Bathyplores*; GOODRICH in BATHER (19) p. 227. *B. fallax* (p. 138); *B. natans*, known certainly only from W. coast Norway, habitat (p. 137); *B. tizardi* (p. 138): geogr. and bathymetric distrib. of each: LUDWIG (209).

*Benthodites*, err. pro *Benthodytes* (q.v.); PERRIER (264).

*Benthodytes*; GOODRICH in BATHER (19) p. 229. *B. glutinosa*; PERRIER (264) p. 119. *B. janthina*; RICHARD (282) p. 81, fig. 31. *B. lingua*; PERRIER (264) p. 119.

*Benthogone rosea*, descr. with varr. [nov.] *cylindrica* and *4-lineata*; PERRIER (264) p. 117.

*Capheira*; GOODRICH in BATHER (19) p. 229.

*Caudina*; GOODRICH in BATHER (19) p. 233.

*Cheiridota* et *Cheirodota*, vide *Chiridota*.

*Chiridota*; GOODRICH in BATHER (19) p. 234: key to French spp.;

- ACLOQUE (1) p. 466. *C. discolor*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 165. *C. dunedinensis*, vide *Trochodota*. *C. laevis*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 164. + *C. traquairi*; PEACH (260) p. 223.
- Cladodactyla*, individuals of this genus common in S. Patagonia; CARBAJAL (55) p. 411.
- Colochirus*; GOODRICH in BATHER (19) p. 230.
- Cucumaria*; GOODRICH in BATHER (19) p. 230, fig. iv: key to French spp.; ACLOQUE (1) p. 466: key to Belgian spp.; LAMEERE (188) p. 37. *C. calcigera*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 146. *C. elongata*; PERRIER (263) p. 300: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 147. *C. frondosa*; NORDGAARD (245) p. 8: HARTLAUB (153) pp. 185, 191: LUDWIG in DOEDERLEIN (93) p. 229: habitat geogr. and bathymetric distrib., not in Pacific, unless it incl. *C. californica* and *C. miniata*; LUDWIG (209) p. 141. *C. glacialis*, brood-pouch with young, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 144. *C. hyndmani*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 145. *C. incurvata*, described; PERRIER (263) p. 300. *C. lactea* incl. *C. mosterensis*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 148. *C. minuta*; LUDWIG in DOEDERLEIN (93) p. 229: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 141. *C. pentactes*; ALLEN & TODD (7) p. 187: original drawings of dissections; GOODRICH in BATHER (19) p. 231, fig. iv. *C. pusilla*, geogr. and bathymetric distrib.; LUDWIG (209) p. 148. *C. typica*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 149.
- Cucumariidae*, diagnosis and discussion; GOODRICH in BATHER (19) p. 230.
- Deima*; GOODRICH in BATHER (19) p. 229, fig. iii.
- Deimatinae*, diagnosis; GOODRICH in BATHER (19) p. 229.
- Echinocucumis*; GOODRICH in BATHER (19) p. 230.
- Elpidia*; GOODRICH in BATHER (19) p. 229, fig. iii. *E. glacialis*, habitat, geogr. and bathymetric distrib., probably does not incl. specimen from S. of Australia; LUDWIG (209) p. 140: incl. *Tutela echinata* R. Perr., coasts of Morocco; PERRIER (264) p. 117.
- Elpidiidae*, diagnosis, divided into sub-famm. *Psychropotinae*, *Deimatinae*, *Elpidiinae*, general discussion; GOODRICH in BATHER (19) p. 227.
- Elpidiinae*, diagnosis; GOODRICH in BATHER (19) p. 229.
- Eynypniastes*; GOODRICH in BATHER (19) p. 229.
- Euphronides*; GOODRICH in BATHER (19) p. 229. *E. auriculata*, *E. talismani* (p. 118), *E. violacea* (p. 119); PERRIER (264).
- Eupyrus*; GOODRICH in BATHER (19) p. 233. *E. scaber*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 160.
- Gastrothuria*, n. g. of *Holothuriinae* with genotype *G. limbata*, n. sp., no locality given; PERRIER (263) p. 299.
- Haplodactyla*; GOODRICH in BATHER (19) p. 233. *H.* sp.; BEDFORD (25) p. 293.
- Holothuria*; GOODRICH in BATHER (19) p. 227: key to French spp.; ACLOQUE (1) p. 466. *H. farcimen*; PERRIER (263) p. 299. *H. forskali*, original drawings; descr. as typical *Holothurian*; GOODRICH in BATHER (19) p. 219, fig. i. *H. impatiens*, section of body-wall; op. cit. p. 223, fig. ii: excretion by gonads; RUSSO (293). *H. mammata*; PERRIER (263) p. 299. *H. nigra*, endoskeleton; STEWART (318). *H. poli*, excretion by gonads; RUSSO (293). *H. tubulosa*, original drawing of dissection; GOODRICH in BATHER (19) p. 222, fig. ii: muscles; STEWART (318) p. 90: excretion by gonads; RUSSO (293).
- Holothuriidae*, diagnosis, divided into sub-famm. *Synallactinae*, *Holothuriinae*; GOODRICH in BATHER (19) p. 227.



- Holothuriinae*, diagnosis ; GOODRICH in BATHER (19) p. 227.
- Hypsilothuria* ; PERRIER (262) p. 275, fig. 206. *H. attenuata* distinguished from *Sphaerotheria bitentaculata* Ludw. and *H. talismani*, descr. ; PERRIER (264) p. 116.
- Ilyodaemon* ; GOODRICH in BATHER (19) p. 229, fig. iii.
- Irpa* ; GOODRICH in BATHER (19) p. 229. *I. abyssicola*, habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 141.
- Kolga* ; GOODRICH in BATHER (19) p. 229. *K. hyalina* and *K. nana*, habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 140.
- Labidocemas* ; GOODRICH in BATHER (19) p. 227.
- Laetmogone* ; GOODRICH in BATHER (19) p. 229. *L. violacea*, incl. *L. spongiosa* Theel, *L. brongnarti* E. Perr., and *L. jourdaini* Petit ; PERRIER (264) p. 116.
- Leptosynapta girardi*, breeding-period ; WILSON (355) p. 351.
- Meseres* ; GOODRICH in BATHER (19) p. 227.
- Mesothuria* ; loc. cit. *M. intestinalis* incl. *Holothuria verrilli*, habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 138.
- Molpadia* ; GOODRICH in BATHER (19) p. 233.
- Molpadiidae*, diagnosis and discussion ; GOODRICH in BATHER (19) p. 232.
- Muelleria* ; GOODRICH in BATHER (19) p. 227. *M. agassizi*, parasitic copepods ; EDWARDS (103).
- Myriotrochus* ; GOODRICH in BATHER (19) p. 234. *M. rinki* ; KNIPOVICH (175) pp. 452, 458 : habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 166.
- Ocnus compressus*, n. sp. 627 metres, no locality given ; PERRIER (263) p. 301.
- Oneirophanta* ; GOODRICH in BATHER (19) p. 229. *O. alternata*, n. sp. no locality given, but = *O. mutabilis* E. Perrier, Explor. sous-marines, fig. 201 ; PERRIER (264) p. 117.
- Orcula* ; GOODRICH in BATHER (19) p. 230. *O. barthii*, geogr. and bathymetric distrib. (vide etiam *Phyllophorus drammondi*) and *O. luminosa*, probably syn. of *O. barthii*, spicules having been destroyed in specimens of that sp. ; LUDWIG (209) p. 152.
- Orphnurgus* ; GOODRICH in BATHER (19) p. 229.
- Paelopatides* ; GOODRICH in BATHER (19) p. 227.
- Pannychia* ; GOODRICH in BATHER (19) p. 229.
- Paractinopoda*, Order, diagnosis, incl. only fam. *Synaptidae* ; GOODRICH in BATHER (19) p. 234.
- Parelpidia* ; GOODRICH in BATHER (19) p. 229.
- Pelagothuria*, *P. natatrix*, position discussed ; GOODRICH in BATHER (19) p. 230, fig. iii. *P. ludwigi*, n. sp., Indian Ocean, general description, and three sketches from life ; CHUN (63) p. 511.
- Pelagothuriidae*, diagnosis, GOODRICH in BATHER (19) p. 230.
- Peniagone* ; op. cit. p. 229, fig. iii. *P. porcellus*, n. sp., 4060 metres, *P. vexillum*, n. sp., no localities given ; PERRIER (264) p. 118.
- Pentactella laevigata*, Kerguelen ; CHUN (63) p. 252.
- Perianna roseum* ; PERRIER (264) p. 118.
- Phyllophorus* ; GOODRICH in BATHER (19) p. 230. *P. drummondii*, geogr. and bathymetric distrib., habitat, specimen with abnormal tentacles, approaching *Orcula barthii* which perhaps is syn. of this sp. ; LUDWIG (209) p. 155. *P. pellucidus*, habitat, geogr. and bathymetric distrib., variation in number of tentacles ; LUDWIG (209) p. 153.
- Phymosoma*, nom. nov. pro "*Phymosoma* Ship[ley], récemment proposé pour des Holothuries," non Haime ; LAMBERT (187) p. 54. [*Phymosoma* is not Shipley, but Quatrefages, not a Holothurian but a Gephyrean ; the name *Physcosoma* is already proposed for it by Selenka (Zool. Anz. xx, p. 460, 1897), but objected to by Spengel (Zool. Anz. xxi, p. 50, 1898) because *Physchiosoma* was used by Brera, 1811, presumably



in error for *Physcosoma*. But since Selenka gave φύσκων as the derivation of his name, it should have been spelled *Physconosoma*, a form not liable to confusion with any name derivable from φύσκη. *Prophygnosoma* is therefore a syn. of *Physconosoma*.]

*Pseudocucumis*; GOODRICH in BATHER (19) p. 230.

*Pseudostichopus*; GOODRICH in BATHER (19) p. 227.

*Psolidium*; GOODRICH in BATHER (19) p. 230.

*Psolus*; GOODRICH in BATHER (19) p. 230, fig. iv: key to French spp.; ACLOQUE (1) p. 466. *P. fabricii*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 156. *P. nummularis*, n. sp. 1050 metres, no locality given; PERRIER (263) p. 301. *P. operculatus*, N. of Spitzbergen, 1000 metres, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 159. *P. phantapus*; KNIPOVICH (175) p. 458: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 155. *P. squamatus*; PERRIER (262) p. 274, fig. 205: habitat, geogr. and bathymetric distrib., Theel's var. from W. Patagonia very doubtful; LUDWIG (209) p. 158.

*Psychropotes*; GOODRICH in BATHER (19) p. 229, fig. iii. *Psychropates* [sic] *buglossa*, incl. *P. grimaldii* Herouard; *P. fucata*: PERRIER (264) p. 119.

*Psychropotinae*, diagnosis; GOODRICH in BATHER (19) p. 228.

*Psychrotrepes*; GOODRICH in BATHER (19) p. 229.

*Rhopalodina*; GOODRICH in BATHER (19) p. 230, fig. iv.

*Scotoanassa*; GOODRICH in BATHER (19) p. 229.

*Scotodeima*; GOODRICH in BATHER (19) p. 229.

*Scotoplanes*; GOODRICH in BATHER (19) p. 229.

*Siphothuria incurvata*, vide sub *Cucumaria*.

*Sphaerothuria*; GOODRICH in BATHER (19) p. 230, fig. iv: vide etiam *Hypsilothuria*.

*Stichopus acanthomela* and *S. diaboli* are both syn. of *S. moebii*; CLARK (65). *S. diaboli*; VERRILL (342) p. 583. *S. regalis*; PERRIER (263) p. 300: copper; DUBOIS (99). *S. richardi*, new forms of spicules; PERRIER (263) p. 300. *S. sitchaensis*, geogr. and bathymetric distrib.; LUDWIG (209) p. 136. *S. tremulus*, parasitic gastropod; BONNEVIE (42): geogr. and bathymetric distrib., not known certainly N.E. of Finmark, unless "*Holothuria calcarea* Sars" of Jarzynsky from Murman coast be *H. ealcarea*, which is syn. of this sp. (p. 136), to this is referred as var. *S. griegi* Oesterg. (p. 137); LUDWIG (209). *S. xanthomela*; VERRILL (342) p. 584.

*Synallactes*; GOODRICH in BATHER (19) p. 227.

*Synallactinae*, diagnosis; GOODRICH in BATHER (19) p. 227.

*Synapta* (GOODRICH, p. 234, fig. v), larval stages (p. 5, figg. iii, v, xvii); BATHER (19): key to French spp.; ACLOQUE (1) p. 465. *S.* sp. indet.; LUDWIG: spicules destroyed by formalin; HARTLAUB: in DOEDERLEIN (93) p. 230. *S. abyssicola*; PERRIER (264) p. 119. *S. digitata*, original drawings of dissections; GOODRICH in BATHER (19) p. 233, fig. v. *S. inhaerens*; ALLEN & TODD (7) p. 187: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 162. *S. lappa*; CONANT (71). †*S. oligocaenica*, n. sp., Upper Oligocene of Offenbach am Main, spicules contrasted with Mediterranean spp., *S. digitata*, *S. inhaerens*, *S. hispida* and compared with *S. kefersteini* and *S. albicans*; SPANDEL (313). *S. viridis*, Bermuda, habitat, colour; VERRILL (342) p. 587.

*Synaptidae*, diagnosis and discussion; GOODRICH in BATHER (19) p. 234: alleged fossil representatives either sponge-spicules, or some other *Hol.* family; †SPANDEL (313).

*Theelia*; GOODRICH in BATHER (19) p. 230, fig. iv.

*Thyone*; GOODRICH in BATHER (19) p. 230, fig. iv: key to French spp.; ACLOQUE (1) p. 466. *T. fusus*; PERRIER (263) p. 301: habitat, geogr.

- and bathymetric distrib.; LUDWIG (209) p. 150. *T. gadeana*, n. sp. 106 metres, no locality given; PERRIER (263) p. 301. *T. raphanus*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 151.
- Trochoderma*; GOODRICH in BATHER (19) p. 234. *T. elegans*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 165.
- Trochodota*; GOODRICH in BATHER (19) p. 234. *T. dunedinensis*, spicules and locomotion; HORST (162).
- Trochostoma*; GOODRICH in BATHER (19) p. 233. *T. albicans* and *T. blakei*; PERRIER (264) p. 119. *T. boreale*; HARTLAUB (153) pp. 177, 190: KNIPOVICH (175) p. 458: LUDWIG in DOEDERLEIN (93) p. 230: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 161.
- Tutela echinata*, vide *Elpidia glacialis*.

## (C).—ECHINOIDEA.

General discussion of the Classification of *Ech.*, such main divisions as *Palechinoidea* and *Euchinoidea* (or Nearechinides), as *Regularia* and *Irregularia*, and as Haeckel's based on external form of ambulacra (*Anthosticha* etc.), are rejected in favour of one based on presence or absence of jaws, viz. *Gnathostomata* and *Atelostomata*; the former further divided into *Plagiocysta*, *Endocysta*, and *Exocysta*, and *Endocysta* again into *Holostomata* and *Glyphostomata*, which names, latinised from Pomel, are preferred to Ludwig's *Abranchiata* and *Branchiata*, or Bell's *Endo-* and *Ecto-branchiata*; the sub-orders are in the main those of Zittel & Duncan, the classification of F. Bernard according to number of interambulacral columns (*Mono-*, *Poly-*, *Tetraplacida* etc.) being rejected; LAMBERT (187) pp. 4, 52 et sqq. General discussion of the Classification, rejection of *Palechinoidea* and *Euechinoidea*, and division into Sub-Class I. *Regularia Endo-branchiata*, with Orders, *Bothriocidaroida*, *Cystocidaroida*, *Cidaroida*, *Melonitoida*, *Plesiocidaroida*; II. *Regularia Ecto-branchiata*, with Order, *Diademoida*; III. *Irregularia*, with Orders, *Gnathostomata*, *Atelostomata*; GREGORY in BATHER (19) pp. 299–324: for sub-orders, families, etc., see alphabetical index.

Systematic value of intimate structure of spines; HESSE (159) p. 204.

*Abatus*; GREGORY in BATHER (19) p. 322.

*Abranchiata*, rejected (see general paragraph, supra); LAMBERT (187) p. 52.

*Acanthechinus*; GREGORY in BATHER (19) p. 309.

*Aceste*; GREGORY in BATHER (19) p. 322.

+*Acrocidaris*; GREGORY in BATHER (19) p. 307. *A. formosa*; HUENE (166) p. 356. *A. nobilis*, microstructure of spine; HESSE (159) p. 219. *A. striata*; BENOIST (31) p. 3.

*Acrocladinae* Lamb., sub-tribe of *Polyporinae*; LAMBERT (187) p. 55.

+*Acrosalenia*; GREGORY in BATHER (19) p. 306: distinguished fr. *Eodiadema* (p. 35), place in phylogeny (p. 49); LAMBERT (187). *A. decorata*; BENOIST (31) p. 3. *A. hemicydaroides*, microstructure of spine; HESSE (159) p. 218. *A. lamarcki*; BENOIST (31) p. 4. *A. pustulata*, microstructure of spine; HESSE (159) p. 218. *A. spinosa*, genotype, differences from more ancient species; LAMBERT (187) p. 36. *A. wiltoni*, microstructure of spine; HESSE (159) p. 218.

*Acrosalenidae*, diagnosis; GREGORY in BATHER (19) p. 306.

+*Actinophyma*; GREGORY in BATHER (19) p. 310.

+*Adelopneustes*; GREGORY in BATHER (19) p. 316.

*Adetinae*, section of *Spatangidae*; GREGORY in BATHER (19) p. 321.

+*Aelopneustes*; GREGORY in BATHER (19) p. 313.

*Aerope*; GREGORY in BATHER (19) p. 322.

- Agassizia*; GREGORY in BATHER (19) p. 322, fig. xxxix.  
*Alexandria*, discussed; GREGORY in BATHER (19) p. 318.  
*Amblypneustes*; GREGORY in BATHER (19) p. 313. *A. pallidus*, microstructure of spine; HESSE (159) pp. 239, 243.  
†*Amblypygus*; GREGORY in BATHER (19) p. 320.  
*Amphidetes* vide *Echinocardium*.  
*Amphipneustes lorioli* n. g. et sp. allied to *Palaeopneustes*, 'Belgica' expedition; KOEHLER (180) p. 817.  
†*Ananchytes* seu *Ananchites*, vide *Echinocorys*.  
†*Anaulocidaris*; GREGORY in BATHER (19) p. 314: a Mesozoic Perischoechinoid?; LAMBERT (187) p. 39.  
*Anochanus*; GREGORY in BATHER (19) p. 320.  
*Anomalanthus*; GREGORY in BATHER (19) p. 318.  
†*Anorthopygus*; GREGORY in BATHER (19) p. 320. *A. michelini*; CHOFFAT (61) & (62) pp. 159, 193, is a limestone form, p. 199. *A. orbicularis*; CHOFFAT (61) & (62) pp. 159, 163, 172, 193, is a marl form, p. 199.  
*Anthosticha* and congruous terms of Haeckel criticised (see general paragraph, supra); LAMBERT (187) p. 52.  
*Arachninae* subfam. of *Scutellidae*; LAMBERT (187) p. 55.  
*Arachniopleurus*, incl. *Radiocyphus*; GREGORY in BATHER (19) p. 312.  
*Arachnoides*, discussed; GREGORY in BATHER (19) p. 318: key to French spp.; ACLOQUE (1) p. 464. *A. placenta*; BEDFORD (25) p. 285.  
*Arachnoidinae*, diagnosis; GREGORY in BATHER (19) p. 318.  
*Arbacia*; op. cit. p. 308, fig. xxi. *A. sp.*; LOEB (199), MATHEWS (226), MORGAN (235), VERNON (337), see II, F, viii. *A. sp.* "the black sea-urchin" of Eastern U. S., original photograph; DAVENPORT (80) fig. 186. *A. alternans*, literature (p. 7), *A. dufresnei*, confusion with *A. alternans*, measurements, colour in life, and number of anal plates in 10 examples, distribution (p. 5); MEISSNER (229). *A. nigra*, microstructure of spine; HESSE (159) pp. 238, 244, pl. xii. *A. punctulata*, breeding period; WILSON (355) p. 351: microstructure of spine; HESSE (159) pp. 238, 244. *A. pustulosa*, see II, F, viii; VERNON (337), VIGUIER (343), WINKLER (358): microstructure of spine; HESSE (159) pp. 238, 244. *A. spatuligera* ditto; locc. citt.  
*Arbaciadinae*, n. subfam. of *Echinometridae*, this form preferred to *Arbaciinae* because there exists a genus *Arbaciina* [why not *Arbaciinae*?]; LAMBERT (187) p. 54.  
*Arbaciidae*, diagnosis; GREGORY in BATHER (19) p. 307.  
*Arbaciina*, Subord. nov. of *Diademoida*, diagnosis, divided into Famm. *Hemicidaridae*, *Arbaciidae*; GREGORY in BATHER (19) p. 307: name liable to confusion with Pomel's genus *Arbaciina*; LAMBERT in Review.  
†*Arbaciina monilis*, or *Psammechinus monilis* Vinassa; AIRAGHI (4) p. 70: not *A. monilis* Desmarest; LAMBERT in Review.  
†*Archaeocidaridae*, diagnosis; GREGORY in BATHER (19) p. 301.  
†*Archaeocidaris*; GREGORY in BATHER (19) p. 302, fig. xvi: either a syn. of *Echinocr.* (q. v.), or may be restr. to spp. with smooth scrobicules, e.g. *A. biangulata*, *A. megastylus*, *A. norwoodi*, *A. rossica*, *A. trautscholdi*, and *A. wortheni* Hall (as genotype), in which sense it precedes *Cidarotropus* Pomel [but cannot be accepted since it excludes the undoubted genotype *Cidaris urei*]; LAMBERT (187) p. 42. *A. sp.*; PEACH (260) p. 223. *A. sp.*; PROSSER (272) pp. 5, 6, 7, 153, 157. *A. agassizi*, Upper Coal Measures, Topeka, spines and plates only (p. 48, pl. viii); *A. megastylus*, spines (p. 49, pl. viii): BEEDE (29). *A. munsteri* vide sub *Eocidaris*. *A. rossica*; LAMBERT (187) p. 38: microstructure of spine; HESSE (159) p. 213. *A. trudifer*, Topeka limest.; BEEDE (29) p. 47, pl. viii. *A. urei*; PEACH (259) p. 65, and (260) p. 223. *A. verneuili* vide sub *Permocidaris*.



- +*Archaeodiadema* Greg.; GREGORY in BATHER (19) p. 308: syn. of *Hemipedina*; LAMBERT (187) p. 30.
- +*Archaeopneustes*; GREGORY in BATHER (19) p. 321.
- +*Archiacia*; loc. cit. *A. delgadoi*; CHOFFAT (62) pp. 155, 159, 163, 193.
- +*Argopatagus*; GREGORY in BATHER (19) p. 323.
- +*Aspidodiadema* referred to *Orthopsidae*; GREGORY in BATHER (19) p. 308, fig. xxii; this astonishes LAMBERT in Review.
- +*Asternata*, Subord. of *Atelostomata*, diagnosis, divided into Famm. *Echino-neidae*, *Nucleolitidae*, and *Cassidulidae*; GREGORY in BATHER (19) p. 320.
- +*Asterocidaris* Cott., maintained as subgenus of *Gymnocidaris*, with genotype *A. nodoti*, comprises also *Hemicidaris granulosa* Wr. and *Pseudocidaris peroni* Cott.; LAMBERT (186) p. 483. *A. granulosa*; BENOIST (31) p. 4: variation in ornament of apex, structure of ambulacrals, specimens from l'Indre form a **var. nov.** *benoisti*; certain specimens figd. in Echinol. Helvet. and by Duncan are not this sp.; LAMBERT (186) p. 484, pl. viii. *A. minor*; BENOIST (31) p. 3: is a *Gymnocidaris*; LAMBERT (186) p. 483.
- +*Asteropsis*; GREGORY in BATHER (19) p. 309.
- +*Asterostoma*; GREGORY in BATHER (19) p. 321.
- +*Asthenosoma*; GREGORY in BATHER (19) p. 311, figg. x, xxix, xxx. *A. sp.*; CHUN (63) p. 495. *A. heteractis* n. sp., 5 fms. near Singapore, loops of gut, section of radius showing a deeper nerve system; BEDFORD (25) p. 278, pl. xxi. *A. hystrix*, muscles; STEWART (318) p. 89.
- +*Astrilypeus*; GREGORY in BATHER (19) p. 317.
- +*Astropyga*; GREGORY in BATHER (19) p. 310.
- +*Atelostomata*, Order, diagnosis, discussion, divided into Sub-orders *Asternata* and *Sternata*; GREGORY in BATHER (19) p. 318.
- +*Australanthus*; GREGORY in BATHER (19) p. 321.
- +*Baueria* placed in *Salenidae*; GREGORY in BATHER (19) p. 306: surprising action; LAMBERT in Review.
- +*Boletia*; GREGORY in BATHER (19) p. 313.
- +*Bothriocidaris*, descr.: *B. pahleni*; GREGORY in BATHER (19) p. 300, fig. xiv [adapted from Schmidt, here and in the description is a confusion of tubercles with pores, see PYCRAFT in Review].
- +*Bothriocidaroida*, Order, diagnosis, no family mentioned; loc. cit.
- +*Bothriolampas abundans*; FOURTAU (116) p. 481.
- +*Bothriopygus*; GREGORY in BATHER (19) p. 320.
- +*Branchiata*, rejected (see general paragraph, supra); LAMBERT (187) p. 52.
- +*Breynella*; GREGORY in BATHER (19) p. 321.
- +*Breynia*; GREGORY in BATHER (19) p. 323. +*B. vicentina*; OPPENHEIM (251) p. 114.
- +*Brissomorpha fuchsi*, microstructure of spine; HESSE (159) p. 260, text-fig.
- +*Brissopatagus*; GREGORY in BATHER (19) p. 323.
- +*Brissopsis*; GREGORY in BATHER (19) p. 322, fig. xlii: discussed; SCHLUTER (299) p. 361: key to French spp.; ACLOQUE (1) p. 464. +*B. brevistella* and +*B. cretacea*, vide sub *Diplodetus*. +*B. lamberti*, n. sp., Mid. Eocene, Ghizeh, type in coll. Lambert; GAUTHIER in FOURTAU (115) p. 42, pl. iii. *B. lyrifera*; CHUN (63) p. 158: +AIRAGHI (4) p. 72. +*B. minor*, vide sub *Plesiaster*. +*B. ottangensis*; MARIANI (224).
- +*Brissus*; GREGORY in BATHER (19) p. 323. *B. sp.* Diego Garcia; CHUN (63) p. 415. +*B. sp.* microstructure of spine; HESSE (159) p. 259. *B. carinatus* Gm. (= *latecarinatus* Leske) incl. *B. unicolor* Al. Ag. non Klein, distrib., measurements; BEDFORD (25) p. 287: Andaman Is.; ANDERSON (11) p. 13: microstructure of spine; HESSE (139) p. 259. +*B. oblongus*; AIRAGHI (4) p. 73.



- Calycina*, Subord. of *Diademoida*, diagnosis, divided into Famm. *Saleniidae*, *Acrosaleniidae*; GREGORY in BATHER (19) p. 306.
- Calymne*; GREGORY in BATHER (19) p. 321.
- +*Caratomus*; GREGORY in BATHER (19) p. 320. *C. faba* et var. *trigonopygus*; KILIAN & LORY (170) p. 61.
- +*Cardiaster*; GREGORY in BATHER (19) p. 321. *C. sp.* nondescr.; DIBLEY (92) p. 494. *C. ananchytis*; BRYDONE (51) p. 12: incl. *Spatangus granulatus* Hag.; DEECKE (82) pp. 55, 71: as zonal fossil; ROWE (288) p. 313. *C. cf. arnaudi*; SCHLUETER (297) p. 419. *C. concavus* Catullo sp., redescr. and distinguished fr. *C. maximus*; SCHLUETER (299) p. 375. *C. granulatus*; CHOFFAT (62) pp. 172, 193. *C. heberti*, vide *C. maximus*. *C. maximus* redescr. fr. Meudon Chalk, incl. *Stegaster facii* and *C. lehmanni* of Stolley as crushed examples, also *C. heberti* Cott. nom. nud., which last incl. *Holaster cordiformis* Sorign. non Woodward; SCHLUETER (298) p. 373, pls. xvii, xviii. *C. perezii* Wright (Brit. Cret. Ech. pl. lxviii, fig. 2) perhaps not same as *Holaster perezii* Sism.; LORIOL (207) p. 60. *C. pilula*, vide sub *Offaster*. *C. seu Scagliaster pseudoitalicus*, redescr., compared with *C. italicus* [vide sub *Stegaster*]; SIMIONESCU (306) p. 37, pl. iii. *C. pygmaeus*, as zonal fossil; ROWE (288) pp. 318, 319.
- +*Cardiolampas* (*Dysaster*) *ovulum*; KILIAN & LORY (170) pp. 15, 50, 52.
- Cassidulidae*, diagnosis, divided into Subfamm. *Clypeinae*, *Cassidulinae*, *Catopyginae*, *Echinolampinae*, and *Eolampinae*; GREGORY in BATHER (19) p. 321.
- Cassidulinae*; loc. cit.
- +*Cassidulus*; loc. cit. *C. florealis*; CLARK (66) p. 335. *C. lusitanicus*; CHOFFAT (62) pp. 172, 193. *C. romani*, n. sp., Lower Eocene, Gebel Haridi, Egypt, type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTAU (115) p. 34, pl. ii. *C. subquadratus*; HOLMES (160) p. 129.
- Catopyginae*; GREGORY in BATHER (19) p. 321.
- +*Catopygus*; loc. cit. and fig. xvi. *C. albensis*, compared with *C. carinatus*; PETRACZEK (265) p. 35. *C. cylindricus*; KILIAN & LORY (170) p. 61. *C. pusillus*; CLARK (66) p. 335. *C. rouvillei*, n. sp., Vraconnian near Uzès, type in coll. F. Leenhardt at Montauban; LORIOL (207) p. 64, pl. vi.
- Centrostephanus*; GREGORY in BATHER (19) p. 309. *C. rodgersi*, microstructure of spine; HESSE (159) p. 249, text-fig. iv.
- Chondrocidaris*; GREGORY in BATHER (19) p. 302.
- Cidaridae*, diagnosis; loc. cit.: divided into 4 Sub-famm. *Streptocidarinae*, *Stereocidarinae*, *Tetracidarinae*, *Orthocidarinae*; LAMBERT (187) p. 53.
- Cidaris* descr.; GREGORY in BATHER (19) p. 302, figg. xiii, xvi, xvii. +*C. sp.*; KILIAN & LORY (170) p. 60. +*C. sp.*; STILLE (319) p. 13. +*C. sp.* indet.; SCHLUETER (297) p. 420. +*C.*, n. f., spine; BETTONI (34) p. 10. +*C. admeto* Münster, syn. of *Eodiadema regularis*; LAMBERT (187) p. 32. +*C. admeto* Quenst., partim *Mesodiadema* (q.v.), partim *Cidaris* aff. *liagora*; LAMBERT (187) p. 32. +*C. alata*; BROILI (48) p. 369; O. GORDON (132) p. 339, and (249) p. 309; ZITTEL (368) p. 349: microstructure of spine; HESSE (159) p. 230. +*C. amalthaei* vide *Miocidaris*. +*C. angulata*, microstructure of spine; HESSE (159) p. 219. +*C. antarctica*, n. sp., Lower Miocene, S. Patagonia, spines and plates from various locc.; ORTMANN (255) p. 369. +*C. aspera*, microstructure of spine; HESSE (159) p. 215. +*C. avenionensis*; DEPÉRET (89) p. 402; DOUXAMI (95) p. 420: microstructure of spine; HESSE (159) p. 223. +*C. bathonica*; BENOIST (31) p. 3. +*C. baugéyi*; GROSSOUVRE (145) p. 59. +*C. biformis*, microstructure of spine; HESSE (159) p. 227. +*C. blumenbachii*; HUENE (166) pp. 352, 355, 362: microstructure of spine; HESSE (159) p. 215. +*C. bradfordensis*, ditto; loc. cit. +*C. brauni*; BROILI (48) p. 369; O. GORDON (132) p. 340,

and (249) p. 309: KOSSMAT (184) p. 90: (incl. *C. catenifera* and *C. waechteri*), microstructure of spine; HESSE (159) p. 229. +*C. buchi*; BROILI (48) p. 369: ZITTEL (368) p. 350: microstructure of spine; HESSE (159) p. 230. +*C. c[*o*]aeus* Quenst. referred to *Permocidaris*; LAMBERT (187) p. 39. *C. canaliculata*, is a *Dorocidaris* not a *Goniodaris*, measurements of 13 examples, colour in life, distrib.; MEISSNER (229) p. 3. +*C. caryophyllia*; DEL BUE (87) p. 122. +*C. cenomanensis*; CHOFFAT (62) pp. 155, 192. +*C. cervicalis*; HUENE (166) p. 351: microstructure of spine; HESSE (159) p. 215. +*C. cervicornis*; OPPENHEIM (251) p. 82. +*C. clavigera*; DIBLEY (92) p. 493: DEECKE (82) p. 71: STRAHAN (322): as zonal fossil; ROWE (288) pp. 304, 326: microstructure of spine; HESSE (159) p. 219. +*C. clunifera*, ditto (p. 234), +*C. conoidea*, ditto (p. 233); HESSE (159). +*C. cornifera*; KILIAN & LORY (170) pp. 53, 56. +*C. coronata*, microstructure of spine; HESSE (159) p. 216. +*C. courtaudiana*; TOBLER (328) p. 291. +*C. criniferus* vide sub *Mesodiadema*. +*C. cydonifera*; KILIAN & LORY (170) p. 52. +*C. decorata*; BROILI (48) p. 369: O. GORDON (132) p. 340, and (249) p. 309: microstructure of spine; HESSE (159) p. 227. +*C. desori* Cott. 1857, referred to *Plegiocidaris senex* (q.v.); LAMBERT (187) p. 48. +*C. dissimilis*, microstructure of spine; HESSE (159) p. 219. +*C. domarenensis*; BETTONI (34) p. 10. +*C. dorsata*; BROILI (48) p. 369: O. GORDON (132) p. 339, and (249) p. 309: KOSSMAT (184) p. 90: spines; SOEHLE (311) p. 2: microstructure of spine; HESSE (159) p. 230. +*C. edwardsi* and +*C. elegans*, ditto; HESSE (159) p. 216. +*C. erbaensis*, Mte Domaro; BETTONI (34) p. 9, pl. i. +*C. farringdonensis*, microstructure of spine (p. 235), +*C. faujasi*, ditto (p. 219); HESSE (159). +*C. figueirensis*; CHOFFAT (62) pp. 163, 172, 192. +*C. filograna*, microstructure of spine; HESSE (159) p. 216. +*C. aff. filograna*; HUENE (166) p. 352. +*C. "Cydaris [sic] filigranoides* (Mgh.) forma inedita, descritta in un autografo del Meneghini che io conservo," Sinemurian, Central Appenines; MORENA (233) p. 186. +*C. flexuosa*; O. GORDON (132) p. 340, and (249) p. 309: (incl. *C. brandis*, *C. mayeri*, *C. cingulata*), microstructure of spine; HESSE (159) p. 231, text-fig. +*C. florigemma*; HUENE (166) pp. 355, 356, 362, 364, 365: KOBY (177) p. 209: STILLE (319) p. 17: microstructure of spine; HESSE (159) p. 216. +*C. fustis*; BROILI (48) p. 369: microstructure of spine; HESSE (159) p. 231. +*C. gingensis*; STRUEBIN (324) pp. 335, 337. +*C. glandifera*; KILIAN & LORY (170) pp. 15, 33: POPOVICI-HATZEG (269) p. 550: microstructure of spine; HESSE (159). +*C. grandaeva*, microstructure of spine; HESSE (159) p. 214: vide etiam sub *Eotiaris*. +*C. grossularites*, microstructure of spine; HESSE (159) p. 234. +*C. guerangeri*; BENOIST (31) p. 3. +*C. guiaensis*; CHOFFAT (62) p. 184. +*C. hagenowi* and +*C. hardouini*, microstructure of spine; HESSE (159) p. 220. +*C. hausmanni*; BROILI (48) p. 369: O. GORDON (132) p. 340, and (249) p. 309: microstructure of spine; HESSE (159) p. 228, text-fig. +*C. heteracantha*, KILIAN & LORY (170) pp. 56, 57. +*C. hirudo*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 304, 318, 324: microstructure of spine; HESSE (159) p. 220. +*C. ulminsterensis*, vide sub *Plegiocidaris*. +*C. impressa*, **n. sp.**, Toarcian (couches à *Leptaena*) May, Calvados; LAMBERT (187) p. 47, pl. i. +*C. interlineata*; OPPENHEIM (251) p. 81: microstructure of spine; HESSE (159) p. 223. +*C. itys*, discussed and retained in the genus; LAMBERT (187) p. 40, pl. i. +*C. cf. jullieni*; BLAYAC (39). +*C. junqueiroensis*; CHOFFAT (62) p. 185. +*C. keyserlingi*, vide *Eotiaris*. +*C. klipsteini*; BROILI (48) p. 369. +*C. koechlini*; TOBLER (328) p. 301. +*C. aff. lardyi*; CHOFFAT (62) p. 228. +*C. leenhardtii*, **n. sp.**, based on spines, Aptian near Apt (Vaucluse), type in coll. F. Leenhardt at Montauban; LORIOL (207) p. 72, pl. vii. +*C.*

*vhadyi*; KILIAN & LORY (170) p. 52. +*C. liagora*; O. GORDON (132) p. 340, and (249) p. 309: vide etiam *Triadocidaris*. +*C. lineolata*; KILIAN & LORY (170) p. 50. +*C. lingualis*, microstructure of spine; HESSE (159) p. 220. +*C. ludovici*, referred to *Polycidaris*; BETTONI (34) p. 11. +*C. malum* (p. 184), +*C. mamarozensis* (pp. 172, 192), +*C. maresi* (p. 184); CHOFFAT (62). +*C. marginata*; KILIAN & LORY (170) p. 33: microstructure of spine; HESSE (159) p. 217. +*C. martini*, vide sub *Plegiocidaris*. +*C. matheyi*; LORIOLO (206) p. 182. +*C. meandrina*; BENOIST (31) pp. 3, 4: spine, now first found in N. France; LAMBERT (186) p. 475. +*C. meridanaensis*; KILIAN & LORY (170) p. 50. *C. metularia*; ANDERSON (11) p. 16: microstructure of spine; HESSE (159) p. 225. +*C. mexithoeirensis*; CHOFFAT (62) p. 184. +*C. moorei*, vide sub *Plegiocidaris*. +*C. morierei*, at May, horizon discussed; LAMBERT (187) p. 48. +*C. muensteri*, microstructure of spine; HESSE (159) p. 224. +*C. muensteri* MELI 1880, non Sism., referred to *Dorocidaris papillata*; MELI (230) p. 332. +*C. multimammata*, microstructure of spine; HESSE (159) p. 225. +*C. muricata*; BAUMBERGER & MOULIN (23) p. 171: CHOFFAT (62) p. 184: KILIAN & LORY (170) pp. 50, 52: microstructure of spine; HESSE (159) p. 220. +*C. oligocena*, ditto; HESSE (159) p. 224. +*C. olifex*, vide sub *Mesodiadema*. +*C. oosteri*; OPPENHEIM (251) p. 81: microstructure of spine; HESSE (159) p. 224. +*C. oppeli*; LORIOLO (206) p. 182. +*C. parastadifera*; O. GORDON (132) p. 339, and (249) p. 309. +*C. perornata*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) p. 304. +*C.* cf. *perornata*, microstructure of spine; HESSE (159) p. 220. +*C. pistillum*; DEECKE (82) p. 71: microstructure of spine; HESSE (159) p. 220. +*C.* cf. *pretiosa*; CHOFFAT (62) p. 184. +*C. propinqua*; HUENE (166) pp. 351, 359, 365: KILIAN & LORY (170) p. 15: microstructure of spine; HESSE (159) p. 217. +*C. pseudopistillum*, ditto; HESSE (159) p. 221. +*C. psilonoti*; ENGEL (106) p. 240: STILLE (319) p. 7. +*C. punctata*, microstructure of spine; HESSE (159) p. 235. +*C. punctatissima*; KILIAN & LORY (170) pp. 47, 52: POPOVICI-HATZEG (269) p. 550: microstructure of spine; HESSE (159) p. 221. +*C. pustulosa*; KILIAN & LORY (170) p. 52. +*C. pyrifera* [sic] (p. 234), and +*C. pyrenaica* (p. 221), microstructure of spine; HESSE (159). +*C. regularis* is not a *Hypodiadema*, however that genus be interpreted, but is an *Eodiadema*; LAMBERT (187) p. 34. +*C. reussi*; ZELIZKO (364) p. 175: microstructure of spine; HESSE (159) p. 221. +*C. rhyzacantha* [sic]; KILIAN & LORY (170) pp. 52, 53. +*C. roemeri*; BROILI (48) p. 369: (incl. *C. globifera* and *C. tyrolensis*), microstructure of spine; HESSE (159). +*C. rossica*, vide sub *Archaeocidaris*. +*C. rossii*, n. sp., Priabona beds of Castelli, E. of Possagno, type at Pavia University, compared with *C. sabaratensis*, *C. scampicci*, and *C. mezzoana*; OPPENHEIM (251) p. 82, pl. xvii. +*C. sceptrifera*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) p. 304: microstructure of spine; HESSE (159) p. 221. +*C.* cf. *sceptrifera*; SCHLUETER (297) p. 419. *C. sceptrum*; REIS (278) pp. 44, 84. +*C. schwabenau*; KORNHUBER (183) p. 87: microstructure of spine; HESSE (159) p. 224. +*C. scrobiculata*, ditto; HESSE (159) p. 231. +*C. semicostata*; BROILI (48) p. 369: (incl. *C. klipsteini* and *C. perplexa*), microstructure of spine; HESSE (159) p. 231. +*C. serrifera*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 309, 313. +*C. similis* (incl. *C. baculifera*) (p. 227), and +*C. sorigneti* (p. 222), microstructure of spine; HESSE (159). +*C. spinigera*; KILIAN & LORY (170) p. 52: OPPENHEIM (251) p. 80: microstructure of spine; HESSE (159) pp. 222, 224. +*C. spinosa*; LORIOLO (206) p. 182: microstructure of spine; HESSE (159) p. 217. +*C. spinulosa*, descr.; GREPPIN (138) p. 186. +*C. splendens*; CLARK (66) p. 339. +*C. subcoronata*; BROILI (48)



- p. 369: ZITTEL (368) p. 349. †*C. submarginata*, microstructure of spine; HESSE (159) p. 217. †*C. subularis*; OPPENHEIM (251) p. 81. †*C. subvesiculosa*; DEECKE (82) pp. 43, 71, 90: SCHMIDT (301) p. cxviii. *C. (Stereocidaritis) subvesiculosa* d'Orb.; GREGORY in BATHER (19) p. 303, f. xvii, not d'Orbigny's sp., but probably *Stereocidaritis cretosa* Mantell; LAMBERT in Review [this was Cotteau's opinion, but Schlueter 1892 said Cotteau was incorrect, nevertheless this not *C. subvesiculosa*]. †*C. cf. subvesiculosa*; DEECKE (82) p. 55: spine; PETRACZEK (265) p. 36: microstructure of spine; HESSE (159) p. 222. †*C. thomasi*, **n. sp.**, Cenomanian, beds with *Neolobites vibrayeanus*, Beharieh oasis, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 6, pl. i. *C. thourasii* [sic], microstructure of spine; HESSE (159) p. 226. *C. tiara*; ANDERSON (11) p. 7. *C. tribuloides*; CONANT (71): DUERDEN (100) p. 613, and (101) p. 620: †ALMERA (9) p. 760. †*C. trigona*; BROILI (48) p. 369: ZITTEL (368) p. 350: microstructure of spine; HESSE (159) p. 229. †*C. tuberculosa*, microstructure of spine; HESSE (159) p. 217. †*C. vesiculosa*; BRUNHUBER (50): CHOFFAT (62) pp. 185, 228: WISNIOWSKI (359) p. 240: microstructure of spine; HESSE (159) p. 222. *C. vesiculosa*; BRYDONE (51) p. 12. †*C. cf. vesiculosa*; BLANCKENHORN (38) p. 25: CHOFFAT (62) pp. 155, 192. †*C. walcotti*; CLARK (66) p. 339. †*C. wismanni*; BROILI (48) p. 369: microstructure of spine; HESSE (159) p. 227. †*C. zschokkei*; TOBLER (328) p. 291.
- Cidaroida*, Order, diagnosis, divided into Famm. *Lepidocentridae*, *Archaeocidaridae*, *Cidaridae*, and *Diplocidaridae*; GREGORY in BATHER (19) p. 301.
- †*Cidaropsis*; GREGORY in BATHER (19) p. 307: distinguished from *Hemipedina*; LAMBERT (187) p. 28.
- †*Cidarotropus* Pomel, vide *Archaeocidaritis*.
- Cionobrisus*; GREGORY in BATHER (19) p. 323. *C.?* sp. nondescr., Andaman Sea, 640 fms.; ANDERSON (11) p. 10.
- †*Circopeltis*; GREGORY in BATHER (19) p. 307. *C. neocomiensis*; CHOFFAT (62) p. 184.
- †*Claviaster*; GREGORY in BATHER (19) p. 321. *C. cornutus*; BLANCKENHORN (36) p. 38.
- †*Cleistechinus*; GREGORY in BATHER (19) p. 323.
- Climapedinae* [melius *Climacopedinae*] **n. subfam.** of *Pedininae*; LAMBERT (187) p. 54.
- †*Clypeanthus*; GREGORY in BATHER (19) p. 321.
- Clypeaster*; GREGORY in BATHER (19) p. 318, figg. v, xxxvi. *C. sp.*; ANDERSON (11) pp. 6, 7. *C. sp.* original photogr.; DAVENPORT (80) fig. 188. †*C. sp.*; COPPA (72) p. 35. †*C. acuminatus*; LOERENTHEY (204) p. 59. †*C. aegyptiacus*; DEPÉRET (89) p. 403: vide etiam *C. altus*. †*C. altus*; ROTH v. TELEGD (286) p. 95: perh. incl. *C. aegyptiacus*, characteristic of Helvetian, list of locc., Pliocene specimens belong to *C. pliocenicus*; MELI (230) p. 337. †*C. breunigi*; OPPENHEIM (251) p. 92, pl. xv. †*C. cf. complanatus*; WOLFF (360). †*C. crassicostratus*; KORNHUBER (183) p. 87: LOERENTHEY (204) p. 61. †*C. duncanianus*, **nom. nud.** Miocene, Burma; NOETLING (244) p. 44. †*C. cf. gibbosus*; LOERENTHEY (204) p. 59. *C. humilis*, endoskeleton; STEWART (318): microstructure of spine; HESSE (159) p. 252. †*C. imperialis*, in GREGORY (112) Zool. Rec. 1899, "rappelle plutôt la forme de *C. olisiponensis* et *C. duchassingi*"; LAMBERT in Review. †*C. isthmicus*; FOURTAU (115) p. 59. †*C. melitensis*; KORNHUBER (183) p. 87. †*C. cf. parvus*; ROTH v. TELEGD (286) p. 95. †*C. pliocenicus* Seguenza, maintained and distinguished fr. *C. altus* Lam., list of locc.; MELI (230) p. 337. †*C. priscus*, **n. sp.**, Priabona beds of Romano near Bassano, type in coll. Balestra, Bassano; OPPENHEIM



- (251) p. 92, pl. v: specimen too poor to found a species on, and probably not a *Clypeaster* at all; LAMBERT in Review. +*C. pyramidalis*; LOERENTHEY (204) p. 61. *C. rotundus*, endoskeleton; STEWART (318). +*C. scillae*; ALMERA (9) p. 760. *C. scutiformis*, microstructure of spine; HESSE (159) p. 251, pl. xiii. +*C. cf. subdepressus*; WOLFF (360).
- Clypeastridae*, diagnosis, divided into subfamm. *Clypeastrinae* and *Arachnoidinae*; GREGORY in BATHER (19) p. 318.
- Clypeastrina*, Subord. of *Gnathostomata*, diagnosis, discussed and divided into Famm. *Fibulariidae*, *Laganidae*, *Scutellidae*, and *Clypeastridae*; GREGORY in BATHER (19) p. 316.
- Clypeastrinae*, diagnosis; GREGORY in BATHER (19) p. 318.
- Clypeastroida*, Suborder of *Exocysta*, comprises *Conoclypeidae*, *Proscutidae*, *Clypeasteridae* and *Scutellidae*; LAMBERT (187) p. 55.
- Clypeinae*; GREGORY in BATHER (19) p. 321.
- +*Clypeopygus*; loc. cit. *C. michelini*; KILIAN & LORY (170) p. 56.
- +*Clypeus*; GREGORY in BATHER (19) p. 321, fig. xi: place in phylogeny; LAMBERT (187) p. 48. *C. altus*; BENOIST (31) p. 3: MUEHLBERG (236) p. 315. *C. hugi*; MUEHLBERG (236) p. 320. *C. patella*; BENOIST (31) p. 6. *C. ploti*; BENOIST (31) p. 3: MUEHLBERG (236) pp. 310, 313. *C. sinuatus*; TOBLER (328) p. 303: WISNIOWSKI (359) p. 232.
- +*Codechinus*; GREGORY in BATHER (19) p. 310. *C. rotundus*; KILIAN & LORY (170) p. 56.
- +*Codiopsis*; GREGORY in BATHER (19) p. 309. *C. lorini*; CHOFFAT (62) p. 184: var. *alpina*; KILIAN & LORY (170) p. 56.
- Coelopleurus*; GREGORY in BATHER (19) p. 308. +*C. cf. delbosi*, compared with *C. equis* (= *coronalis*); OPPENHEIM (251) p. 85. *C. maillardi*; ANDERSON (11) p. 5.
- +*Coenodiadema* A. Ag., syn. of *Hemipedina*; LAMBERT (187) p. 30.
- +*Collyrites*; GREGORY in BATHER (19) p. 321: place in phylogeny; LAMBERT (187) p. 48. *C. analis*; BENOIST (31) pp. 3, 6. *C. bicordata*; HUENE (166) p. 363: KOPY (177) p. 209. *C. cf. bicordatus*; BLEICHER & MIEG (40). *C. friburgensis*, internal cast from Camporo, measured; MARIANI (222) p. 409. *C. gillieronii*; GREPPIN (138) p. 190. *C. jaccardi*; BAUMBERGER & MOULIN (23) p. 171. *C. cf. malbosi*; KILIAN & LORY (170) p. 15. *C. ovalis*; HUENE (166) pp. 350, 351: MUEHLBERG (236) pp. 320, 324: WISNIOWSKI (359) p. 232. *C. ovulum*; CHOFFAT (62) p. 184. *C. ringens*; GREPPIN (138) p. 189. *C. cf. ringens*; MUEHLBERG (236) p. 324.
- +*Collyritidae*, diagnosis, discussed; GREGORY in BATHER (19) p. 321.
- Colobocentrotus*; GREGORY in BATHER (19) p. 313. *C. atratus*; loc. cit. fig. xxxiv; ANDREWS (13) p. 117: microstructure of spine; HESSE (159) pp. 239, 244.
- Conoclypeidae*, diagnosis; GREGORY in BATHER (19) p. 316.
- +*Conoclypeus*; loc. cit. *C. ?* sp., Eocene, Somaliland; GREGORY (136) p. 42. *C. conoideus*; REIS (278) pp. 25, 26, 28, 33, 44. *C. delanouei*; FOURTAU (116) p. 483, & (119): study of variations, apical system (fig. 1), periproct (fig. 2), var. *milviformis* Greg. only individual variation; FOURTAU (117) pp. 51-55, & (118) p. 136. *C. pignaturii*, n. sp., Middle Miocene of Calabria, allied to *C. conoideus*, type in Coll. R. Liceo Visconti di Roma; AIRAGHI (3) p. 174, pl. i. *C. plagiosomus*; NELLI (240) p. 415: VERRI & ANGELIS D'OSSAT (339) p. 259.
- +*Conodoxus cairolis*; CHOFFAT (62) pp. 159, 163, 193.
- Conolampas*; GREGORY in BATHER (19) p. 321.
- +*Conulus*—*C. castaneus*; RIAZ (281) p. 769. *C. vulgaris*; PAQUIER (257) pp. 427, 430.
- +*Coptodiscus*; GREGORY in BATHER (19) p. 316.
- +*Coptophyma*; GREGORY in BATHER (19) p. 312.

- †*Coptosoma*; GREGORY in BATHER (19) p. 310. *C. alexandrii*; ALESSANDRI (6) p. 552. *C. blanggianum*; OPPENHEIM (251) p. 86. *C. ghizehense*, **n. sp.**, Mid. Eocene, Ghizeh, type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTAU (115) p. 31, pl. ii. *C. speciosum*; CLARK (66) p. 339. "*C. thevestense* Per. and Gauth." Gregory is probably *C. abbatei*; FOURTAU (118) p. 137.
- Coptosomatinae* as tribal name replaces *Cyphosomatinae*; LAMBERT (187) p. 54.
- †*Coraster*; GREGORY in BATHER (19) pp. 321, 322.
- Cottaldia*; GREGORY in BATHER (19) p. 309. †*C. beneltiae*; CHOFFAT (62) pp. 150, 163, 185, 193.
- Cotteaudinae*, **nov.** sub-tribe of *Orthoporinae*; LAMBERT (187) p. 54.
- †*Craterolampas*; GREGORY in BATHER (19) p. 321.
- †*Crotoclypeus*, place in phylogeny; LAMBERT (187) p. 49.
- †*Cyclaster*; GREGORY in BATHER (19) p. 323: vide etiam sub *Prenaster carinatus*.
- Cyphosoma* Ag. 1838; GREGORY in BATHER (19) p. 310, fig. xxviii: non Mamerheim 1837, must yield to *Phymosoma* Haime 1853 non Shihey [i.e. Qfg.], for spp. vide sub *Phymosoma*; LAMBERT (187) p. 54.
- Cyphosomatidae*, diagnosis; GREGORY in BATHER (19) p. 310.
- Cyrtoma*, incl. *Stigmatopygus*, *C. posthumum*, **n. sp.**, Lower Miocene, L. Pueyrredon, S. Patagonia; ORTMANN (255) p. 369.
- Cystechinus*; GREGORY in BATHER (19) p. 321.
- †*Cystocidaroida*, diagnosis, incl. Famm. *Palaeodiscidae* and *Echinocystidae*; GREGORY in BATHER (19) p. 300.
- Dendrasterinae*, **n. subfam.** of *Scutellidae*, with tribes *Scutulinae*, *Rotulinae*, *Monophorinae*; LAMBERT (187) p. 55.
- Dermatodiadema indicum*, **n. sp.**, 470 metres, S. Nias Channel, L. DOEDERLEIN photo, but no description; CHUN (63) p. 362.
- †*Desorella*; GREGORY in BATHER (19) p. 320: place in phylogeny; LAMBERT (187) p. 49.
- Diadema*; GREGORY in BATHER (19) p. 309, fig. xiii: not descended fr. *Eodiadema*, but from a more ancient form; LAMBERT (187) p. 36.
- †*D. sp.*, microstructure of spine; HESSE (159) p. 248. †*D. desori*; PROCHÁZKA (270) pp. 9, 19, 31: spines; PROCHÁZKA (271) pp. 20, 146: of Reuss is not a *Diadema* but based on a spine of *Echinus* type; HESSE (159) p. 250. †*D. inaequale* referred to *Loriolia* (p. 49); †*D. meriani* Quenst. non Ag., referred doubtfully to *Diademopsis* (p. 21); †*D. ruppeli*, referred to *Orthopsis* (p. 29): LAMBERT (187).
- D. saxatile*; ANDREWS (13) p. 117: habitat, distrib., colour; BEDFORD (25) p. 277. *D. setosum*; CONANT (71): anal tube, colour, irritation by spines; ANDERSON (11) pp. 13, 16: eye-spot; BATHER (19) p. 32, figg. xxv, xxvi: microstructure of spine; HESSE (159) p. 246, pl. xiii.
- Diademmatidae*, diagnosis; GREGORY in BATHER (19) p. 309: divided into sub-famm. *Diademinae*, *Tiarinae*, *Pedininae*; LAMBERT (187) p. 53.
- Diademina*, Subord. of *Diademoida*, diagnosis, divided into famm. *Orthopsidae*, *Diademmatidae*, *Diplopodiidae*, *Pedinidae*, *Cyphosomatidae*, *Echinothuridae*; GREGORY in BATHER (19) p. 308.
- Diademinae*, **n. sub-fam.** of *Diademmatidae*, with tribes *Astropyginae* and *Aspi[do]diademinae*; LAMBERT (187) p. 53.
- Diademoida*, Order, diagnosis, divided into Sub-orders *Calycina*, *Arbacina*, *Diademina*, and *Echinina*; GREGORY in BATHER (19) p. 306.
- †*Diademopsis*; GREGORY in BATHER (19) p. 309: discussed, regarded as s. g. of *Hemipedina*, of which it contains the primitive forms, diagnosis, evolution of ambulacra (pp. 6–11), place in phylogeny (p. 50); *D. aequituberculata*, **n. sp.**, based on Cotteau 'Ech. de l'Yonne,' pl. i, ff. 4, 8, Hettangian of Vault-de-Lugny, near Valloux (p. 14, pl. i); *D. bechei* (p. 11); *D. bonissenti* is a var. of *D. serialis* (pp. 13, 20); *D.*

- bowerbanki*, maintained (p. 16): LAMBERT (187). *D. cunningtoni*, vide sub *Hemipedinina*. *D. exigua* referred to *Palaeopedinina minima* (q. v.) (p. 20); *D. geveyi*, n. sp., zone of *Am. planorbis* at Aubenas, Ardèche, also in zone of *A. angulatus* (p. 19, pl. i); *D. globulus*, incl. *D. buccalis*, made type of *Palaeopedinina* (q. v.) (p. 22): LAMBERT (187). *D. granulata*, vide sub *Hemipedinina*. *D. heberti*, discussed and restricted, incl. *D. jauberti* as "mutation géographique, une simple Variété" (pp. 15, 20); *D. heeri*, maintained (p. 16); LAMBERT (187): microstructure of spine; HESSE (159) p. 250. *D. jauberti*, vide *D. heberti*. *D. laffoni*, rejected as insufficiently descr.; LAMBERT (187) p. 16. *D. meriani*, vide sub *Diadema*. *D. michelini*, discussed and restricted, the var. *minor* (Pal. franc. pl. 384, ff. 1, 6) belongs rather to *D. geveyi* (p. 17); *D. micropora* from Rhaetic, with a var. from Hettangian, discussed (p. 14); *D. microtuberculata*, discussed and maintained, incl. small individuals slightly different from type (p. 20); *D. quenstedti*, rejected as insufficiently characterised (p. 17); *D. serialis*, redescribed and discussed, with **varr. nov. depressa** (Desor, Synopsis, pl. xiv, ff. 12, 14) and *magnotuberculata*, from zone of *Am. angulatus* in Ardèche (p. 12, pl. i); *D. tomesi*, maintained (p. 19); *D. varusensis*, maintained (p. 21): LAMBERT (187).
- +*Dictyopleurus*; GREGORY in BATHER (19) p. 312.
- Diplacida*, rejected (see general paragraph supra); LAMBERT (187) p. 53.
- Diplocidaridae*, diagnosis; GREGORY in BATHER (19) p. 303.
- +*Diplocidaris*; GREGORY in BATHER (19) p. 303. *D. cranziensis*; BENOIST (31) p. 4 [=] *D. crausiensis*, n. sp., allied to *D. gigantea*, Vesulian of St. Gaultier (Indre); LAMBERT (186) p. 476, pl. viii. *D. desori*, microstructure of spine; HESSE (159) p. 218. *D. geometrica* (p. 33), *D. gigantea* (p. 15); KILIAN & LORY (170).
- +*Diplodetus*, n. g. of Prymnodesmian Spatangids, distinguished from *Plesiaster* (p. 364), with genotype *D. brevistella* Schluet. olim *Brissopsis* (p. 364), also *D. cretaceus* Schluet. olim *Brissopsis* (p. 366), and *D. (?) recklinghausenensis*, n. sp. (p. 368), all Senonian of Westphalia; SCHLUETER (299): genus criticised by LAMBERT in Review, pl. xv: vide etiam *Plesiaster*.
- +*Diplopodia*; GREGORY in BATHER (19) p. 309, fig. xxvi. *D. brongniarti*; KILIAN & LORY (170) p. 60. *D. depauperata* (pp. 150, 185), *D. deshayesi* (pp. 155, 172, 185, 193); CHOFFAT (62). *D. dubia*; KILIAN & LORY (170) p. 56. *D. lusitanica* (p. 185), *D. marticensis* (pp. 155, 163, 193); CHOFFAT (62): BLANCKENHORN (36) p. 36. *D. variolaris*; CHOFFAT (62) pp. 150, 155, 163, 172, 179, 185, 193.
- +*Diplopodiidae*; GREGORY in BATHER (19) p. 309.
- +*Diplotagma*; GREGORY in BATHER (19) p. 309.
- Diplotheicanthus*, vide *Echinanthus*.
- +*Dipneustes*; GREGORY in BATHER (19) p. 322.
- Discocidaris*; GREGORY in BATHER (19) p. 302.
- +*Discoidaea*; GREGORY in BATHER (19) p. 316, fig. xi. *D. conica*; KILIAN & LORY (170) p. 60: RIAZ (281) p. 769. *D. cylindrica*; DIBLEY (92) pp. 487, 492, 493: PAQUIER (257) p. 402. *D. dixonii*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 317, 318, 319, 324. *D. rotula*; KILIAN & LORY (170) p. 60. *D. subuculus*, op. cit. pp. 57, 60: SOEHLE (311) pp. 41, 48: WISNIEWSKI (359) p. 240.
- Discoidiidae*, diagnosis; GREGORY in BATHER (19) p. 316.
- +*Ditremaster*:—*D. nux*; FOURTAU (115) p. 39: OPPENHEIM (251) p. 107. *D. schweinfurthi*, vide sub *Hemiaster*.
- Dorocidaris*; GREGORY in BATHER (19) p. 302. *D. alcocki*; ANDERSON (11) pp. 5, 7. +*D. blakei*; DEL BUE (87) p. 129. *D. elegans*, S. Nias Channel, text-fig.; CHUN (63) p. 362. *D. papillata*, see II, F, viii;



- VERNON (337): microstructure of spine; HESSE (159) p. 226: MELI (230) p. 332.
- †*Dysaster*; GREGORY in BATHER (19) p. 321, fig. xvi. *D. granulosus*; HUENE (166) p. 359. *D. loryi* (p. 33), *D. subelongatus* (pp. 50, 52); KILIAN & LORY (170).
- †*Echinanthus*, incl. *Diplotheicanthus*; GREGORY in BATHER (19) p. 318. *E. bericus*, n. sp., Priabona beds of Brendola, type in coll. de Zigno, Padua (p. 96, pl. xxi), *E. bufo* (p. 96); OPPENHEIM (251). *E. camerinensis*; VERRI & ANGELIS D'OSSAT (339) p. 259. *E. cuvieri*; REIS (278) pp. 37, 44. *E. placenta*; OPPENHEIM (251) p. 95. *E. aff. pouechei*; REIS (278) p. 84. *E. scutella*, limits and distribution discussed (p. 93), *E. sopitianus* (p. 95); OPPENHEIM (251).
- Echinarachnius*; GREGORY in BATHER (19) p. 317. *E. excentricus*, microstructure of spine; HESSE (159) p. 254, pl. xiii: probably = *Scutella striatula* Conrad 1857 non Serres; †LAMBERT in Review of MERRIAM (175) Zool. Rec. 1899. †*E. juliensis*; HATCHER (154) pp. 101, 102. *E. parma*, original fotogr.; DAVENPORT (80) fig. 187.
- Echinina*, Subord. of *Diademoida*, diagnosis, divided into Famm. *Temnopleuridae*, *Triplechinidae*, *Strongylocentrotidae*, *Echinometridae*, evolution discussed; GREGORY in BATHER (19) p. 311.
- Echininae* sub-fam. of *Echinometridae*, divided into tribes *Ortho-*, *Oligo-*, and *Poly-porinae* (qq. v.); LAMBERT (187) p. 54.
- †*Echinobrissus*, vide etiam *Nucleolites*:—*E. clunicularis*; BENOIST (31) p. 3: MUEHLBERG (236) pp. 315, 320. *E. goldfussi* seu *micraulus*; BENOIST (31) p. 6. *E. aff. parallelus*; CHOFFAT (62) pp. 179, 193. *E. perroni* [sic]; GLANGEAUD (131). *E. roberti*; KILIAN & LORY (170) pp. 53, 56. *E. scutatus*; DEECKE (82) p. 25. *E. waltheri*, n. sp., Santonian of Berak el Gazal, Abou Roach, Egypt, distinguished from *Nucleolites*; GAUTHIER in FOURTAU (115) pp. 16, 21, pl. i: BLANCKENHORN (36) p. 39.
- Echinocardium* [incl. *Amphidetus*]; GREGORY in BATHER (19) p. 323: key to Belgian spp.; LAMEERE (186) p. 37: key to French spp.; ACLOQUE (1) p. 464. *E. cordatum*, habitat; ALLEN & TODD (7) p. 188: microstructure of spine; HESSE (159) p. 256, pl. xiii: (as *Amphidetus*), segmenting ovum; HAMMAR (149): see II, F, viii; VERNON (337), and GIARD (128) p. 762. †*E. saccoi*, n. sp., Plaisancian of Gebel Chelloul, Egypt, type in Mus. Hist. Nat., Paris; FOURTAU (115) p. 62, pl. iv.
- Echinocidaris*; GREGORY in BATHER (19) p. 308: key to French spp.; ACLOQUE (1) p. 463. *E. nigra*, literature; MEISSNER (229) p. 7.
- †*Echinoconus* (vide etiam *Conulus*):—*E. cf. abbreviatus*; BRYDONE (51) p. 12. *E. castanea*; CHOFFAT (62) pp. 155, 193: DIBLEY (92) p. 493: KILIAN & LORY (170) p. 60: as zonal fossil; ROWE (288) p. 318. *E. conicus*; PAQUIER (257) p. 427: DIBLEY (92) pp. 484, 488, 489, 493: as zonal fossil; ROWE (288) pp. 299, 303, 349. *E. globulus*, as zonal fossil; ROWE (288) p. 299. *E. magnificus*; FORTIN (113). *E. mixtus* (p. 60), *E. nucula* (pp. 57, 60); KILIAN & LORY (170). *E. subrotundus*; DIBLEY (92) pp. 486, 488, 490, 493: as zonal fossil; ROWE (288) pp. 318, 324. *E. vulgaris*; BRYDONE (51) p. 12: DEECKE (82) p. 71.
- Echinocorythidae*, diagnosis; GREGORY in BATHER (19) p. 321.
- †*Echinocorys*, incl. *Ananchytes*; l. c., and fig. xxxv. *E. sp.*; PAQUIER (257) p. 427. *E. (et A.) corculum*; LEBEDEV (192) p. 29. *E. (et A.) ovatus*; DEECKE (82) pp. 55, 71, 87, 90, 94: LEBEDEV (192) p. 29: REIS (279) p. 94: SCHLUETER (297) p. 419: microstructure of spine; HESSE (159) p. 261, text-fig.: var. *conicus*; DEECKE (82) p. 71: var. *perconicus*; DEECKE (82) p. 87. *E. semiglobulus*; GROSSOUVRE (145) p. 59. *E. (et A.) striatus*; DEECKE (82) p. 42. *E. (et A.) sulcata*,



- variation; GRÖNWALL (143) p. 68. *E. tenuituberculata*; GROSSOUVRE (145) p. 60. *E.* (et) *A. vulgaris*; BRYDONE (51) p. 12: DIBLEY (92) pp. 484, 489, 493: FORTIN (113): REIS (278) p. 18: SCHMIDT (301) p. cxviii: STRAHAN (322): as zonal fossil; ROWE (288) pp. 303, 305: var. *gibbus*, as zonal fossil; ROWE (288) pp. 308, 313, 338, 342: var. *pyramidatus*, as zonal fossil; ROWE (288) pp. 297, 303, 338, 349.
- Echinocrepis*, referred to both *Spatangidae* and *Pourtalesiidae*; GREGORY in BATHER (19) pp. 321, 324.
- +*Echinocrinus* Agassiz 1841 preferred to *Archaeocidaris* McCoy 1844 (q.v.), with genotype *Cidaris urei*, and to *Palaeocidaris* Desor 1846, with genotype *Cidaris nereis*; the name might be restricted to spp. which agree with the genotype in having radially striate scrobicules; LAMBERT (187) p. 42.
- Echinocyaminae*, **n. sub-fam.** of *Proscutidae*; LAMBERT (187) p. 55.
- Echinocyamus*, discussed; GREGORY in BATHER (19) p. 316, fig. xxxvii: key to Belgian spp.; LAMEERE (188) p. 36: key to French spp.; ACLOQUE (1) p. 464. +*E. ovatus*; LOERENTHEY (204) p. 59. *E. pusillus*; LAMEERE (189) p. 21: +SCALIA (295) p. 9: ontogeny (p. 15 et sqq., figg. vi, xiv, xv), skeletogeny (p. 28, fig. xxiv); BATHER (19): +AIRAGHI (4) p. 71: is a *Fibularia*; LAMBERT in Review: +**var. nov.** *rotundata*, Pliocene to recent, Calabria; STEFANO (316). +*E. pyri-formis* [sic]; OPPENHEIM (251) p. 90. +*E.* aff. *scutatus*; REIS (278) p. 25. +*E. siculus*; SCALIA (295) p. 9. +*E. studeri*; VERRI & ANGELIS D'OSSAT (339) p. 259.
- +*Echinocyphus*; GREGORY in BATHER (19) p. 312.
- +*Echinocystidae*, diagnosis; GREGORY in BATHER (19) p. 301.
- +*Echinocystis*, discussed; GREGORY in BATHER (19) p. 301.
- +*Echinodiadema*; GREGORY in BATHER (19) p. 309.
- Echinodiscus*; op. cit. p. 317. *E. biforis*, microstructure of spine; HESSE (159) p. 253, pl. xiii. *E. laevis* blown ashore on Andamans; ANDERSON (11) p. 11: incl. *Lobophora truncata* and possibly *E. biforis*, variations, measurements, habitat; BEDFORD (25) p. 285.
- Echinolampas*; GREGORY in BATHER (19) p. 321. +*E.* spp., Priabona beds; OPPENHEIM (251) p. 105. +*E. amplius*; DEPÉRET (89) p. 402: FOURTAU (115) p. 59. +*E. angulatus*; VERRI & ANGELIS D'OSSAT (339) p. 259. +*E. beaumonti* Ag., redescr. and now first figd., not *E. beaumonti* from Palarea of Cotteau, compared with *E. politus* (p. 97, pl. x), +*E. blainvillei* (p. 102, pl. ix); OPPENHEIM (251). +*E. cassinellensis* Loriol, **var. nov.** *depressa*, Tongrian of Bormida basin; AIRAGHI (5) p. 111. +*E. discoideus*; WOLFF (360). +*E.* cf. *ellipsoidalis*, horizon discussed; OPPENHEIM (251) p. 106. +*E. farafrahensis*, **n. sp.**, Lower Eocene, Farafrah oasis, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 37, pl. ii. +*E. globulus*; OPPENHEIM (251) p. 101: var. *minor*, considered as young of *E. globulus*, and identical with *Caratomus londrinianus* Mayer-Eymar, but is confined to Lower Eocene, whereas *E. globulus* is only at top of Mid. Eocene; FOURTAU (115) p. 36. +*E. hellei*; AIRAGHI (4) p. 72: should be *E. rangi*; LAMBERT in Review. +*E. hemisphaericus*; ROMAN (285) p. 776: var. *linki*; ROTH v. TELEGD (286) p. 95. +*E. hydrocephalus*, **n. sp.**, Priabona beds of Possagno, type at Univ. Padua; OPPENHEIM (251) p. 103, pl. xvii. +*E. justinae*, **n. sp.**, Priabona beds, type at Univ. Pavia, distinguished from *E. suessi* and *E. lepsiusi*; OPPENHEIM (251) p. 100, pl. xvii: this is a *Progonolampas*; LAMBERT in Review. +*E. laurillardii*, history of name, specimens from Bormida referred to this by Airaghi (4, Zool. Rec. 1899) are now regarded as a var. of *E. cassinellensis* (q.v.); AIRAGHI (5). +*E. lepsiusi*, type in coll. Lepsius, corrections of his original figure (p. 101), +*E. matheroni*, horizon discussed (p. 106), +*E. monte-*

- vialensis*, distinguished from *E. beaumonti* and *E. politus* (p. 99, pl. viii), +*E. ottellii* discussed (p. 105): OPPENHEIM (251). *E. oviformis*; ANDERSON (11) pp. 5, 7. +*E. plagiosomus*; ALESSANDRI (6) pp. 550-552. +*E. posterocrassus*; CLARK (64) p. 5. +*E. scutiformis*; ROMAN (285) passim. +*E. subaffinis*, **n. sp.**, Priabona beds of Possagno, type in coll. Oppenheim, compared with *E. affinis* and allies; OPPENHEIM (251) p. 104, pl. ix. +*E. subcylindricus*; REIS (278) p. 37. +*E. subquadratus* (p. 105), +*E. subsimilis* discussed (p. 106); OPPENHEIM (251). +*E. tumidopetalum*, not Miocene as Gregory was told by Geol. Surv. Egypt, but Eocene; FOURTAU (118) p. 137: BLANCKENHORN (37) p. 430. +*E. zignoi*, **n. sp.**, Priabona beds of Lonigo, type at Univ. Padua; OPPENHEIM (251) p. 103, pl. ix.
- Echinolampinae*; GREGORY in BATHER (19) p. 321.
- Echinometra*; GREGORY in BATHER (19) p. 313, fig. xiii. *E. lucunter* (see II, D, iii); ANDREWS (13) p. 117: endoskeleton; STEWART (318): microstructure of spine; HESSE (159) p. 245. *E. subangularis*; CONANT (71): DUERDEN (101) p. 620: microstructure of spine; HESSE (159) p. 245.
- Echinometridae*, diagnosis; GREGORY in BATHER (19) p. 313: divided into sub-famm. *Phymosominae*, *Arbaciadinae*, and *Echininae*; LAMBERT (187) p. 54.
- Echinonidae*, diagnosis; GREGORY in BATHER (19) p. 320.
- Echinonëus*; GREGORY in BATHER (19) p. 320: place in phylogeny; LAMBERT (187) p. 49. +*E. artini*; DEPÉRET (89) p. 402. *E. cyclostomus*, colour; ANDERSON (11) p. 16.
- +*Echinopedina*; GREGORY in BATHER (19) p. 310.
- +*Echinopsis*; GREGORY in BATHER (19) p. 308: distinguished from *Hemipeditina*; LAMBERT (187) p. 28. *E. sp.* nondescr.; REIS (278) p. 84.
- +*Echinospatagus leymeriei*, vide *Toxaster collegnii*.
- Echinostrephus*; GREGORY in BATHER (19) p. 313. *E. molare*, habitat; ANDERSON (11) p. 14.
- Echinothrix*; GREGORY in BATHER (19) p. 310. *E. sp.*, Diego Garcia; CHUN (63) p. 415. *E. calamaris*, anal tube, colour; ANDERSON (11) p. 13.
- +*Echinothuria*; GREGORY in BATHER (19) p. 311.
- Echinothuridae*, diagnosis, divided into sub-famm. *Pelanechininae* and *Echinothurinae*; GREGORY in BATHER (19) p. 310.
- Echinothurinae*, diagnosis, origin discussed; l. c.
- Echinus*; GREGORY in BATHER (19) p. 313, figg. i-iv and vi-viii: key to Belgian spp.; LAMEERE (188) p. 35: key to French spp.; ACLOQUE (1) p. 463. *E. sp.* nondescr.; CHUN (63) p. 158. *E. acutus*, microstructure of spine; HESSE (159) p. 243: joints; STEWART (318) p. 53: see II, F, viii; VERNON (337). *E. angulosus*, microstructure of spine; HESSE (159) p. 243. +*E. ataxensis* and +*E. carinatus*; GROSSOUVRE (145) p. 65. *E. esculentus*; NORDGAARD (245) p. 8: see II, F, viii; DUBOIS (98): copper; DUBOIS (99): pigment; GRIFFITHS (141): host of Copepod; GIESBRECHT (129) p. 201: larvae; MACBRIDE (213, 215): muscles of lantern; STEWART (318) p. 89: microstructure of spine; HESSE (159) p. 240: descr. as typical *Ech.*; GREGORY in BATHER (19) p. 285 et sqq., figg. i, ii, vi: (incl. *E. sphaera*) distrib., habitat, general description of anatomy and life-history, so far as known, as that of a typical *Ech.*; CHADWICK (59) and CUÉNOT (75). *E. flemingi*; NORDGAARD (245) p. 8. +*E. heberti*; GROSSOUVRE (145) p. 65. *E. horridus*; MEISSNER (229) p. 9. *E. magellanicus*; KOEHLER (180) p. 815: measurements of extremes, distrib.; MEISSNER (229) p. 10. *E. margaritaceus*, measurements, distrib.; MEISSNER (229) p. 11. *E. melo*; +AIRAGHI (4) p. 69: microstructure of spine; HESSE (159) p. 243. *E. microtuberculatus*, host of Copepod; GIESBRECHT

- (129) p. 201: chromosomes and centrosomes; BOVERI (46) pp. 343-348, pl. xiii: see II, F, viii; VERNON (337), and HERBST (156). *E. miliaris*; ALLEN & TODD (7) p. 188: segmenting ovum; HAMMAR (149): larvae; MACBRIDE (213, 215). *E. neumayeri*, **n. sp.**, S. Georgia; MEISSNER (229) p. 12, text-fig. *E. norvegicus*, literature; MEISSNER (229) p. 11. †*E. pouechi* and †*E. rassyacensis*; GROSSOUVRE (145) p. 65. *E. sphaera*, observations on ova and spermatozoa; GEMMILL (125): vide etiam *E. esculentus*. *E. sphaeroides*, vide *Salmacis rari-spina*. †*E. syriacus* Conrad, 9 cotypes found at Yale; BEECHER (26). †*E. woodsi*; CLARK (64) p. 5: (?) TATE (326) p. 111.
- Ectobranchiata*, rejected (see general paragraph supra); LAMBERT (187) p. 52.
- †*Enallaster*; GREGORY in BATHER (19) p. 321, fig. xvi. *E. crismensis*, *E. delgadoi*, *E. lepidus*, and *E. cf. oblongus*; CHOFFAT (62) p. 185. *E. peroni*, **n. sp.**, Lower Aptian, Algeria, distinguished from *Heteraster oblongus*, towards which however a var. passes; FICHEUR (109) p. 590, pl. x. *E. pomeli*, nom. nud.; FICHEUR (108) p. 573: **n. sp.**, Lower Aptian, couches à *Plicatula placunea*, Matmatas and Oran, Algeria, distinguished from *Heteraster couloni*; FICHEUR (109) p. 592, pl. x. *E. texana*; VAUGHAN (336) pp. 16, 84.
- †*Enallopneustes*; GREGORY in BATHER (19) p. 321.
- Encope*; GREGORY in BATHER (19) p. 317. †*E. chilensis*; MOERICKE (232) pp. 589, 609. *E. emarginata*, microstructure of spine; HESSE (159) p. 255.
- Endobranchiata*, rejected (see general paragraph supra); LAMBERT (187) p. 52.
- Endocysta*, order of Gnathostomata (see general paragraph supra); LAMBERT (187) p. 52.
- †*Endodiadema*, distinguished from *Eodiadema*; LAMBERT (187) p. 35.
- †*Enichaster*; GREGORY in BATHER (19) p. 321.
- †*Entomaster*; GREGORY in BATHER (19) p. 321.
- †*Eocidaris*, discussed and restricted (p. 38), *E. drydenensis*, possibly belongs to this genus (p. 39), *E. forbesi*, made type of *Permocidaris* (q.v.) (p. 39); LAMBERT (187). *E. keyserlingi*, microstructure of spine; HESSE (159) p. 213: vide etiam *Eotiaris*. *E. laevispina* maintained in genus (p. 38); *E. laubei*, **n. sp.** removed from *Cidaris liagora* (Laube, pl. ix, fig. 4a) and distinguished from *E. scrobiculata* (p. 39): LAMBERT (187). *E. muensteriana*, microstructure of spine; HESSE (159) p. 213. *E. munsteri*, provisionally retained in this genus (p. 39), *E. rossica* is an *Archaeocidaris* (p. 38), *E. scrobiculata* maintained in genus (p. 38); LAMBERT (187). *E. verneuli*, vide *Permocidaris*.
- †*Eodiadema*; GREGORY in BATHER (19) p. 308: diagnosis, "Criniferen" of Quenstedt (p. 34); considered as the source of all *Glyphostomata* with crenulate tubercles (pp. 36, 50); includes following spp.:—*E. collenoti* Cott. (sub *Pseudodiadema*), *E. granulatum* Duncan, genotype, *E. laqueatum* Quenst. (sub *Cidaris*), *E. lobatum* Wright (sub *Pseudodiadema*), *E. minutum* Buckm. (sub *Echinus*), *E. octiceps* Quenst. (sub *Cidaris*), *E. pusillum*, **n. sp.**, Toarcian of May, near Caen (pl. i), *E. regulare* Münst. (sub *Cidaris*) (p. 35); *E. minutum*, peristome only slightly glyphostomate, approaching holostomate (p. 37, fig. 7): LAMBERT (187).
- Eodiadiminae*, **nov.**, tribe of *Tiarinae*; LAMBERT (187) p. 53.
- †*Eolampas*; GREGORY in BATHER (19) p. 321.
- Eolampinae*; GREGORY in BATHER (19) p. 321.
- †*Eotiaris*, **n. g.** "le plus ancien représentant des *Cidaroida*," with genotype *Cidaris keyserlingi* Geinitz, relations to subsequent genera discussed (p. 40); *E. grandaeus* Quenst. (sub *Cidaris*) placed here provisionally (p. 40); *E. keyserlingi*, removed from *Eocidaris* (p. 38): LAMBERT (187).
- †*Epiaster*; GREGORY in BATHER (19) p. 321. *E. blayaci*, nom. nud.;



- FICHEUR (108) p. 573: *n. sp.*, Lower Aptian, couches à *Plicatula placunea*, Matmatas, Algeria; FICHEUR (109) p. 595, pl. xi: referred, by implication, to *Hypsaster*; LAMBERT in Review. *E. cf. crassissimus*; LAMBERT in RIAZ (281) p. 770: RADKEVICH (277) p. xxxvi. *E. distinctus*, probably var. of *E. crassissimus*; LAMBERT in RIAZ (281) p. 770. *E. gibbus*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 303, 305. *E. heberti*; DE STEFANO (90) p. 32. *E. leenhardtii*, *n. sp.*, Vraconnian near Uzès, type in coll. F. Leenhardt at Montauban; LORIOU (207) p. 62, pl. vi. *E. pouyannei*, nom. nud.; FICHEUR (108) p. 573: *n. sp.*, Lower Aptian, couches à *Plicatula placunea*, Matmatas, Algeria; FICHEUR (109) p. 594, pl. xi: referred to *Hypsaster*; LAMBERT in Review. *E. restrictus*; BLAYAC (39): FICHEUR (108) p. 572. *E. trigonalis*; RIAZ (281) p. 769.
- Eucidaris*, sp., Diego Garcia; CHUN (63) p. 415.
- Euechinoidea*, Sub-class, rejected (see general paragraph supra); GREGORY in BATHER (19) p. 299: LAMBERT (187) p. 52.
- Eupatagus*; GREGORY in BATHER (19) p. 323. *E.*, sp.; ANDERSON (11) p. 7. †*E. tellinii*, vide *Euspatangus minutus*.
- †*Eurhodia*; GREGORY in BATHER (19) p. 321.
- †*Eurypleustes*; GREGORY in BATHER (19) p. 313.
- †*Euspatangus*:—*E. bicarinatus*, redescr., incl. *E. elatus* and *E. cor* Mazzetti; OPPENHEIM (251) p. 117, pl. xvii. *E. cairensis*, a mutation of *E. formosus*, and confined to Lutetian II; FOURTAU (117) p. 57. "*E. coteauvi* Lor." Gregory, is *Plesiospatangus*; FOURTAU (118) p. 135. *E. formosus*, confined to Lutetian I; FOURTAU (117) p. 56. *E. minutus*, redescr., incl. *E. parayi* Koch, *Spatangus pantanellii*, *Hypsospatangus pentagonalis*, and *Eupatagus tellinii* Mazzetti; OPPENHEIM (251) p. 116, pl. x. *E. ornatus*, horizon and distribution in S.E. Europe; OPPENHEIM (250) p. 115: horizon doubtful; OPPENHEIM (251) p. 118. *E. peroni*, *n. sp.*, Lower Eocene, Gebel Haridi, Egypt, type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTAU (115) p. 52, pl. iii. *E. tournoueri*, redescr.; OPPENHEIM (251) p. 115, pl. x. *E. vicinus*, *n. sp.*, Lower Eocene, Gebel Abou el Fodah, near Manfalout, Egypt, type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTAU (115) p. 54, pl. iii.
- Evechinus*; GREGORY in BATHER (19) p. 313.
- Exocysta* as Order of *Gnathostomata*, divided into Suborders *Pileatoida* and *Clypeastroida*; LAMBERT (187) p. 55.
- Faorina*; GREGORY in BATHER (19) p. 322.
- †*Faujasia*; GREGORY in BATHER (19) p. 321.
- Fibularia*; GREGORY in BATHER (19) p. 317. *F.*, sp.; ANDERSON (11) p. 6. †*F. gregata*; CLARK (64) p. 5: TATE (326) p. 111.
- Fibulariidae*, diagnosis; GREGORY in BATHER (19) p. 317.
- Fibularinae*, subfam. of *Proscutidae*; LAMBERT (187) p. 55.
- †*Gagara*, vide *Orthechinus*.
- †*Galeaster*; GREGORY in BATHER (19) p. 321.
- †*Galerites*; GREGORY in BATHER (19) p. 316, fig. xxxv. *G. abbreviatus*; DEECKE (82) pp. 55, 73. *G. albogalerus*, *G. laevis*, and *G. subrotundus*; WISNIEWSKI (359) p. 241. *G. vulgaris* incl. *G. abbreviatus* and *G. roemeri*; DEECKE (82) pp. 55, 73, 87, 94.
- Galeritidae*, diagnosis; GREGORY in BATHER (19) p. 316.
- Galeritypeus*; GREGORY in BATHER (19) p. 320.
- †*Galeropygus*, in *Pygasteridae* (p. 316), referred to *Echinoneidae* (p. 320); GREGORY in BATHER (19): place in phylogeny; LAMBERT (187) pp. 43, 48. *G.*, cf. *caudatus*; MUEHLBERG (236) p. 302.
- †*Gaultieria*; GREGORY in BATHER (19) p. 323.
- †*Gauthieria*; GREGORY in BATHER (19) p. 310: place in phylogeny; LAMBERT (187) p. 49.



- Genicopatagus*, referred to *Spatangidae adetinae*; GREGORY in BATHER (19) p. 321.
- +*Gibbaster*; GREGORY in BATHER (19) p. 323.
- Glyphocyphinae* Dunc., diagnosis; GREGORY in BATHER (19) p. 312: as tribe of *Tiarinae*; LAMBERT (187) p. 53.
- +*Glyphocyphus*, incl. *Rhabdopleurus*; GREGORY in BATHER (19) p. 312. *G. radiatus*, as zonal fossil; ROWE (288) p. 318.
- +*Glyptechinus*; GREGORY in BATHER (19) p. 313.
- +*Glypticus*; GREGORY in BATHER (19) p. 307. *G. hieroglyphicus*; HUENE (166) p. 356.
- Gnathostomata*, Order, diagnosis, divided into Suborders *Holactypina* and *Clypeastrina*; GREGORY in BATHER (19) p. 315.
- Gonicidaris*; GREGORY in BATHER (19) p. 302. *G. canaliculata*, micro-structure of spine; HESSE (159) p. 208, pl. xii. *G. mortenseni*, n. sp., 'Belgica' expedition; KOEHLER (180) p. 816. *G. tubaria*, micro-structure of spine; HESSE (159) p. 226.
- +*Goniophorus*; GREGORY in BATHER (19) p. 306.
- Goniopneustes*; GREGORY in BATHER (19) p. 313.
- +*Goniopygus*; GREGORY in BATHER (19) p. 307. *G.*, cf. *brossardi*; CHOFFAT (62) pp. 172, 193. *G. delphinensis* (pp. 53, 56), *G. intricatus* (p. 37), *G. loryi* (p. 56); KILIAN & LORY (170). *G. major* (p. 172), *G. menardi* (pp. 155, 159, 163, 166, 172, 179, 193), *G. peltatus* (p. 184); CHOFFAT (62).
- Grammechinus*; GREGORY in BATHER (19) p. 313.
- +*Grasia*; GREGORY in BATHER (19) p. 321. *G. elongata*; KILIAN & LORY (170) p. 33.
- +*Guetaria*; GREGORY in BATHER (19) p. 321.
- Gymnocidaris* A. Ag. 1863 with genotype *Cidaris metularia* is not a *Gymnocidaris* Ag.; LAMBERT (186) p. 483.
- +*Gymnocidaris* Ag. 1838, revived with genotype *G. diademata* Ag. (sub *Hemicidaris*), and including *Hemipygus* as syn.; LAMBERT (186) p. 482. *G. cossmanni*, n. sp., Vesulian of St Gaultier (Indre); LAMBERT (186) p. 479, pl. viii; BENOIST (31) p. 4. *G. minor* and *G. pustulosa*; LAMBERT (186) p. 483.
- +*Gymnodiadema*; GREGORY in BATHER (19) p. 308.
- Gymnopatagus*, n. g. near *Eupatagus* with genotype *G. valdiviae*, n. sp., 1134 metres, Somali coast, figd. but not descr.; DOEDERLEIN in CHUN (63) p. 495.
- +*Hagenovia*; GREGORY in BATHER (19) p. 321.
- +*Haimea*; GREGORY in BATHER (19) p. 320.
- +*Hecistocyphus* Pomel, based on *Diademopsis serialis* var. *bonissenti* "par suite d'une erreur d'observation"; LAMBERT (187) p. 20.
- +*Helikodiadema*; GREGORY in BATHER (19) p. 309.
- Heliodidarinae*, nov. sub-tribe of *Polyporinae*; LAMBERT (187) p. 55.
- Hemiaster*; GREGORY in BATHER (19) p. 323, figg. xliii, xlvii. *H.* sp.; KOEHLER (180) p. 815. +*H.* sp. indet.; SCHLUETER (297) p. 419. +*H. adonensis* (pp. 155, 193), +*H. alcantarensis* (pp. 155, 166, 179, 193); CHOFFAT (62). +*H. archiaci*, vide sub *Trachyaster*. *H. batnensis*; BLANCKENHORN (36) table, p. 33; DE STEFANO (90) p. 31. +*H. bellasensis*; CHOFFAT (62) pp. 150, 155, 185, 193. +*H. blankenhorni*, [sic], n. sp., Santonian of Berak el Gazal, Abou Roach, Egypt, type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTAU (115) p. 23, pl. i. +*H. canavarii*; MARIANI (224). *H. cavernosus*, literature, colour in life; MEISSNER (229) p. 13. +*H.*, cf. *cenomanensis*, dwarf; CHOFFAT (62) p. 44. +*H. cubicus*; BLANCKENHORN (36) pp. 28, 37. +*H. delgadoi*; CHOFFAT (62) pp. 150, 155, 163, 185, 193. +*H. fourneli*; FOURTAU (115) p. 13: vide etiam sub *Periaster roachensis*. +*H.* aff. *fourneli*, Cenomanian of Abu Roach (p. 34); BLANCKENHORN

- (36). +*H. n. sp. aff.ourneli*, Santonian, *ibid.* (pp. 34, 39); BLANCKENHORN (36). +*H. lageensis* de Lor. in litt.; CHOFFAT (62) p. 193. +*H. lorioli*, microstructure of spine; HESSE (159) p. 261. +*H. lusitanicus*; CHOFFAT (62) pp. 150, 155, 185, 193: in Egypt, discussed; BLANCKENHORN (36) p. 34. +“*H.*, cf. *lusitanicus* de Lor.” of Blanckenhorn is *H. pseudo-fourneli* and is not to be confused with *Periaster roachensis*; FOURTAU (120) p. 630. +*H. minimus*; KILIAN & LORY (170) p. 61: as zonal fossil; ROWE (288) p. 317. +*H. palpebratus*; CHOFFAT (62) pp. 155, 193. +*H. parastatus*; CLARK (66) p. 330. +*H. pseudo-fourneli*; FOURTAU (119) & (120) p. 630. +*H.*, cf. *pullus*; FRECH (124) p. 307. +*H. recklinghausenensis* referred to *Plesiaster* = *Diplodetus*; SCHLUETER (297) p. 418. +“*H. schweinfurthi* Lor.” Gregory, is *Ditremaster*; FOURTAU (118) p. 136. +*H. scutiger* (pp. 150, 155, 163, 172, 173, 179, 185, 193), dwarf (p. 44), +*H.*, cf. *similis* (pp. 159, 163, 193), +*H. subtilis* (p. 185), +*H.*, cf. *subtilis* (pp. 166, 173, 193), +*H. tumidosus* (pp. 155, 172, 185, 193), +*H.*, cf. *tumidosus* (p. 179); CHOFFAT (62).
- +*Hemicidaridae*, diagnosis; GREGORY in BATHER (19) p. 307.
- +*Hemicidaris*; GREGORY in BATHER (19) p. 307, figg. xvi, xx: split into three genera, *Pseudocidaris*, *Gymnocidaris*, and *Hemicidaris* s. str. with genotype *H. crenularis*; LAMBERT (186) p. 482. *H. abyssinica*, var. *depressa*; ANGELIS D'OSSAT & MILLOSEVICH (16) p. 156. *H. agassizi*, restr. and maintained (p. 480), *H. cartieri*, distinguished from *H. agassizi* (p. 481) and is not a *Prodiadema* (p. 483); LAMBERT (186). *H. clunifera*; KILIAN & LORY (170) p. 53. *H. crenularis*, microstructure of spine; HESSE (159) p. 218. *H. diademata*, distinguished from *H. agassizi*, uncertainty owing to defective figures, nevertheless selected as type for the re-established *Gymnocidaris* L. Ag., previously without genotype indicated; LAMBERT (186) pp. 480-483. *H. granulosa* vide sub *Asterocidaris*. *H. hofmanni*; DEECKE (82) p. 24. *H. intermedia*; HUENE (166) pp. 355, 356, 364: microstructure of spine; HESSE (159) p. 218. *H. langrunensis*; BENOIST (31) p. 3: MUEHLBERG (236) p. 312: Cott., of type-locality, is young of *H. luciensis*; but *H. lorioli*, n. sp., is based on specimens from Bernese Jura descr. as *H. langrunensis* (Loriol, *Echinol. Helvét. Jurass.*, pl. xiv, ff. 20-22); LAMBERT (186) p. 478. *H. luciensis*; BENOIST (31) p. 4: variations in the type-locality descr. and explained, incl. *H. langrunensis* as young; LAMBERT (186) p. 476. *H. purbeckensis*; GLANGEAUD (131). *H. pustulosa*; BENOIST (31) p. 5: vide etiam sub *Gymnocidaris*. *H. undulata*, microstructure of spine; HESSE (159) p. 219.
- +*Hemipatagus*; GREGORY in BATHER (19) p. 321.
- +*Hemipedina*; GREGORY in BATHER (19) p. 309: discussed, its relations to *Diademopsis* (p. 6), restr. and diagnosed, with genotype *H. etheridgei*; LAMBERT (187) p. 28. *H. aspera*, really comes from beds of *Stephanoceras humphriesi*; GREPPIN (138) p. 188. *H. bonei*, doubtfully referred to *Palaeopedina* (p. 27), *H. cunningtoni* Wright, referred doubtfully to *Diademopsis* (p. 21), *H. davidsoni*, referred to *Orthopsis* (p. 29), *H. granulata* Merian, referred doubtfully to *Diademopsis* (p. 21): LAMBERT (187). *H. mairei*, n. sp., Bathonian near Belfort, type in coll. V. Maire at Gray; LORIOL (207) p. 56, pl. vii. *H. microgramma*, referred to *Orthopsis*; LAMBERT (187) p. 29. *H. perforata*; GREPPIN (138) p. 188. *H. saemanni*, referred to *Orthopsis*; LAMBERT (187) p. 29. Other spp. referred to s. g. *Diademopsis* (q.v.); LAMBERT (187).
- +*Hemipneustes*; GREGORY in BATHER (19) p. 321. *H. striato-radiatus*, microstructure of spine; HESSE (159) p. 261.
- +*Hemipygus* Etallon, syn. of *Gymnocidaris* Ag.; LAMBERT (186) p. 483.

- †*Hemitiaris* Pomel, syn. of *Hemicidaris* based on accidental fusions of plates arising in individual growth; LAMBERT (186) p. 478.
- †*Heteraster*:—*H. couloni*; FICHEUR (109) p. 593: KILIAN & LORY (170) pp. 53, 56. *H. oblongus*; FICHEUR (109) p. 591: KILIAN & LORY (170) pp. 53, 56.
- Heterocentrotus*; GREGORY & BATHER (19) p. 313, fig. xxxiii. *H. mamillatus*, joints; STEWART (318): (incl. *H. carinatus*), microstructure of spine; HESSE (159) pp. 239, 244. *H. trigonarius*, microstructure of spine; HESSE (159) pp. 239, 245.
- †*Heterocidaris*; GREGORY in BATHER (19) p. 309.
- †*Heteroclypeus*; op cit. p. 321: Cotteau 1891, is syn. of *Hypsoclypeus* Pomel 1869; LAMBERT in Review of AIRAGHI (3). *H. elegans*, n. sp., Miocene of Sardinia, allied to *H. semiglobus*, type in Mus. civico Milano (p. 176, pl. i); *H. nevianii*, n. sp., Middle Miocene of Calabria, allied to *H. subpentagonalis*, type in Coll. R. Liceo Visconti di Roma (p. 177, pl. i): AIRAGHI (3).
- †*Heterodiadema*; GREGORY in BATHER (19) p. 309: place in phylogeny; LAMBERT (187) p. 49. *H. libycum*; BLANCKENHORN (36) p. 36: CHOFFAT (62) pp. 150, 155, 163, 172, 185, 193. *H. ouremense*; CHOFFAT (62) pp. 150, 155, 185, 193.
- Heterognatha* Bernard rejected; LAMBERT (187) p. 55.
- †*Heterolampas*; GREGORY in BATHER (19) p. 321.
- †*Heterosalenia*; GREGORY in BATHER (19) p. 306.
- Hipponoë*, vide etiam *Tripneustes*. *H. esculenta*; CONANT (71): DUERDEN (101) p. 620: microstructure of spine; HESSE (159) p. 245. *H. variegata* ditto, loc. cit.
- †*Holaster*; GREGORY in BATHER (19) p. 321. *H. carinatus*; RADKEVICH (277) p. xxxvi. *H. cf. carinatus*; BLANCKENHORN (38) p. 25. *H. cordatus*; KILIAN & LORY (170) p. 50. *H. cordiformis* Sorign., vide sub *Cardiaster maximus*. *H. intermedius*; KILIAN & LORY (170) p. 50. *H. laevis*; op. cit. p. 61: RIAZ (281) p. 769. *H. olivalensis* de Lor. in litt.; CHOFFAT (62) pp. 159, 193. *H. perezi*; KILIAN & LORY (170) p. 57: variations from type, incl. *H. bisulcatus* Gras, and perhaps *H. brongniarti*, but perhaps not *Cardiaster perezi* Wright; LORIOI (207) p. 60, pl. vi. *H. cf. perezi*; KILIAN & LORY (170) p. 56. *H. placenta*; DIBLEY (92) pp. 489, 490, 493: as zonal fossil; ROWE (288) pp. 309, 312, 316, 328. *H. planus*; DEECKE (82) pp. 42, 55 (?): DIBLEY (92) pp. 486, 488, 490, 493: STRAHAN (322): as zonal fossil; ROWE (288) pp. 309, 312, 314, 316. *H. subglobosus*; DIBLEY (92) pp. 487, 494: PAQUIER (257) p. 402: RIAZ (281) p. 768. *H. cf. subglobosus*; KILIAN & LORY (170) p. 61: RADKEVICH (277) p. xxxvi. *H. suborbicularis*; WISNIOWSKI (359) p. 241. *H. syriacus* Conrad, holotype and 17 paratypes found at Yale; BEECHER (26). *H. trecensis*; DIBLEY (92) pp. 488, 494.
- Holactypina*, Subord. of *Gnathostomata*, diagnosis, divided into Famm. *Pygasteridae*, *Discoidiidae*, *Galeritidae*, and *Conoclypeidae*; GREGORY in BATHER (19) p. 315.
- †*Holactypus*; GREGORY in BATHER (19) p. 316: place in phylogeny; LAMBERT (187) p. 48. *H. arenatus*; Koby (177) p. 209. *H. cenomanensis*; FOURTAU (119). *H. aff. cenomanensis*; CHOFFAT (62) pp. 155, 159, 163, 179, 193. *H. corallinus*; DEECKE (82) p. 24; *H. depressus*; BENOIST (31) p. 3: MUEHLBERG (236) pp. 313, 315, 320, 324: WISNIOWSKI (359) p. 232. *H. excissus* [sic]; CHOFFAT (62) pp. 150, 185. *H. excisus*, Santonian as well as Cenomanian; FOURTAU (115) p. 21. *H. macropygus*; BAUMBERGER & MOULIN (23) p. 159. *H. micropygus*; CHOFFAT (62) p. 184. *H. neocomiensis*; KILIAN & LORY (170) p. 50. *H. ouremensis*; CHOFFAT (62) pp. 155, 179, 193.
- Holopneustes*; GREGORY in BATHER (19) p. 313.



- +*Homoeaster*; GREGORY in BATHER (19) p. 323.  
*Homolampas*; GREGORY in BATHER (19) p. 323.
- +*Homotoechus*, vide *Perischocidaris*.
- +*Hybechinus* Desor [err. pro *Hypechinus*]; GREGORY in BATHER (19) p. 313.
- +*Hypechinus patagonicus*; HATCHER (154) pp. 101, 102.
- +*Hypoclypeus*, referred to *Echinoneidae*; GREGORY in BATHER (19) p. 320 : place in phylogeny; LAMBERT (187) p. 48. *H. gibberulus*; MUEHLBERG (236) p. 320.
- +*Hypodiadema* Desor, discussed; LAMBERT (187) p. 33 : maintained with a new genotype *Hemicidaris saleniformis*; the true type was *Diadema lamarchi* Desm., referred subsequently by Desor to *Acrosalenia*; *Hemicidaris rathieri* Cott. is added as "neotype"; and *Gymnotiara* Pomel [type *G. varusensis*] regarded as simple syn. [though if the genus as now defined does not include *H. lamarchi*, it would be more correct to adopt Pomel's name]; LAMBERT (186) p. 484. *H. desori* Capellini is based on a fragment of *Diademopsis serialis* (p. 13), *H. varusense*, relations to *Eodiadema* (p. 36); LAMBERT (187).
- +*Hypsaster*, discussed; SCHLUETER (299) p. 364. *H. blayaci*, and *H. pouyannei*, vide sub *Epiaster*.  
*Hypoclypeus*, vide *Heteroclypeus*.
- +*Hypsopatagus* (vel *Hypsopatangus*); GREGORY in BATHER (19) p. 323 : may or may not have subanal fasciole; GAUTHIER in FOURTAU (115) pp. 51, 57, 58. "*H. sp.*" Gregory, doubtful if of this genus; FOURTAU (118) p. 137. *H. sp.*, Priabona beds; OPPENHEIM (251) p. 114. *H. lefebvrei*, remains in the genus though it has a sub-anal fasciole; FOURTAU (115) p. 58. *H. pentagonalis*, vide *Euspatangus minutus*. *H. santamariai* [sic] n. sp., Lower Eocene, Gebel Haridi, Egypt, type in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 56, pl. iv.
- +*Ilariona*; GREGORY in BATHER (19) p. 320.
- +*Inflataster* is syn. of *Physaster* Pomel, which is not an Ananchitid but an Aeropid; LAMBERT in Review of ANTHULA.
- +*Infraclypeus*, referred to *Echinoneidae*; GREGORY in BATHER (19) p. 320.
- +*Infulaster*; GREGORY in BATHER (19) p. 321. *I. excentricus*, incl. *I. hagenowi* Borch.; DEECKE (82) p. 42.
- +*Iraniasaster*; GREGORY in BATHER (19) p. 323.  
*Irregularia*, Sub-class, diagnosis, divided into Orders *Gnathostomata* and *Atelostomata*; GREGORY in BATHER (19) p. 315.
- +*Isaster*; GREGORY in BATHER (19) p. 321.
- +*Isopneustes*; GREGORY in BATHER (19) p. 323.
- +*Jeronia*; GREGORY in BATHER (19) p. 321.
- +*Koninckocidaris*; GREGORY in BATHER (19) p. 302.  
*Laganidae*, diagnosis; GREGORY in BATHER (19) p. 317.
- +*Laganum*; GREGORY in BATHER (19) p. 317. *L. sp.*; ANDERSON (11) p. 5. *L. sp.*, hybrid; BEDFORD (25) p. 285, pl. xxiii. +*L. balestrai*, n. sp., Priabona beds of La Granella near Priabona, type in Museo civico Bassano; OPPENHEIM (251) p. 91, pls. ix, x. *L. decagonale*, colour, variations, measurements; BEDFORD (25) p. 284, pl. xxiii. *L. depressum*; ANDERSON (11) p. 11 : growth-stages figd.; BEDFORD (25) p. 283, pl. xxiii. +*L. fragile*; OPPENHEIM (251) p. 91.
- +*Lambertia* Oppenheim 1899, nom. preocc. Desvoidy 1863, et Souverbie 1869, mut. in *Oppenheimia*; COSSMANN (73) : compared with *Nacospatangus* and *Atelospatangus* (p. 112), the name *Oppenheimia* Cossm. substituted (p. 338), and *L. gardinali* redescri. (p. 113, pl. x); OPPENHEIM (251).
- +*Lambertiaster*; GREGORY in BATHER (19) p. 323.
- +*Lampadaster*; GREGORY in BATHER (19) p. 321.
- +*Lamieria*; GREGORY in BATHER (19) p. 316.  
*Leiocidarinae*, vide *Liocidarinae*.



- Leiocardis*, relations to *Rhabdocardis* discussed; OPPENHEIM (251) p. 84: key to French spp.; ACLOQUE (1) p. 463. +*L. cf. alta*, microstructure of spine (p. 224), +*L. itala*, ditto (p. 225); HESSE (159): Dames' description corrected, distinguished from *Cidaris calamus*, probably not known from Egypt; OPPENHEIM (251) p. 83, pl. xvii: specimen figured by Loriol probably not same sp. as that figd. by Koch; LAMBERT in Review.
- +*Leiocyphus*; GREGORY in BATHER (19) p. 312.
- +*Leiopedina*; GREGORY in BATHER (19) p. 313. *L. samusi*; OPPENHEIM (251) p. 89. *L. tallavignesi*, distribution discussed; OPPENHEIM (251) p. 87: spines from Vicentin so referred by Dames probably belong to a *Cidarid*; HESSE (159) p. 225.
- +*Leiosoma* Cott.; GREGORY in BATHER (19) p. 310. *L. jauberti*, referred to *Phymechinus*; LAMBERT (186) p. 489.
- +*Lenita*; GREGORY in BATHER (19) p. 317.
- +*Lepidechinus*; GREGORY in BATHER (19) p. 301.
- +*Lepidesthes*; GREGORY in BATHER (19) p. 305.
- +*Lepidesthidae*, diagnosis; GREGORY in BATHER (19) p. 304.
- +*Lepidocentridae*, diagnosis; GREGORY in BATHER (19) p. 301.
- +*Lepidocentrus*; GREGORY in BATHER (19) p. 301, fig. xv.
- +*Lepidocardis*; GREGORY in BATHER (19) p. 302.
- Lepidopleurus* Dunc. & Slad. non Risso; GREGORY in BATHER (19) p. 312.
- +*Leptocardis*; op. cit. p. 307: distinguished from *Hemipedina*; LAMBERT (187) p. 28. *L. blaburensis*, vide sub *Mesodiadema*.
- Leskia*, vide *Palaeostoma*.
- +*Linchophorus*; GREGORY in BATHER (19) p. 323.
- Linopneustes*; GREGORY in BATHER (19) p. 323.
- Linthia*; loc. cit. +*L. aschersoni* probably not identical with *L. esnehensis* as Gregory supposes, but with *L. cavernosa*; FOURTAU (118) p. 136. *L. cavernosa*, variations from type, compared with *L. aschersoni* which is probably a syn. of this and not of *L. esnehensis* as Gregory thinks; GAUTHIER in FOURTAU (115) p. 39. +*L. heberti*, Gascon and Vicentine types compared; OPPENHEIM (251) p. 107. +*L. oblonga*; BLANKENHORN (36) p. 38. +*L. perfossa*; REIS (278) p. 84. +*L. pseudoverticilis* n. sp., Priabona beds of Priabona, type in Mus. f. Naturk. Berlin, also other localities and museums, compared with spp. of *Schizaster* and *Linthia*; OPPENHEIM (251) p. 107, pl. x: this should not be left in *Linthia*; LAMBERT in Review. +*L. aff. subglobosa*; REIS (278) p. 84.
- Liocardarinae*, nov. tribe of *Stereocidarinae*; LAMBERT (187) p. 53.
- Lobophora truncata*, vide *Echinodiscus laevis*.
- +*Loriolia*, incl. *Heterotiara* and *Colpotiara* Pomel, place in phylogeny; LAMBERT (187) p. 49. *L. inaequale* (olim *Diadema*); LAMBERT (187) p. 49.
- Lovenia*; GREGORY in BATHER (19) p. 323. *L. elongata*; ANDERSON (11) p. 5: distrib.; BEDFORD (25) p. 286. +*L. forbesi*; CLARK (64) p. 5.
- L. gregalis*; ANDERSON (11) p. 7.
- +*Lysechinidae*, diagnosis; GREGORY in BATHER (19) p. 305.
- +*Lysechinus*, discussed; GREGORY in BATHER (19) p. 305.
- +*Macraster*; GREGORY in BATHER (19) p. 321.
- Macropneustes*; GREGORY in BATHER (19) p. 323. +*M.?* *compressus*; KOCH (178) p. 56. +*M. crassus*, not a *Megapneustes* now that the diagnosis of that genus is altered; GAUTHIER in FOURTAU (115) p. 51. +*M. prevosti*, figd.; BOURSALT (45).
- +*Magnosia*; GREGORY in BATHER (19) p. 309. *M. camarensis*; CHOFFAT (62) p. 184. *M. globulus* and *M. pulchella*; KILIAN & LORY (170) p. 56.
- Maretia*; GREGORY in BATHER (19) p. 323. +*M. ovata*; WOLFF (360).

- M. planulata*, microstructure of spine; HESSE (159) p. 259. *Megalaster*; GREGORY in BATHER (19) p. 321.
- †*Megapneustes*, this genus was based only on the absence of the sub-anal fasciole, a character to be used with great reserve in older forms, in fact the name was confessedly introduced "pour éviter à quelque confrère inconnu la peine de faire ce genre et de me mettre en Synonymie"; now a specimen of the genotype, *M. grandis*, shows traces of this fasciole, so to distinguish the genus from *Macropneustes* stress is now laid on the presence of tubercles on the interporiferous areas; but *Megapneustes* as thus defined differs from *Hypsospatangus* only by the depression of the ambulacra "quelquefois bien faible"; GAUTHIER in FOURTAU (115) p. 50; LAMBERT in Review confirms approximation to *Hypsospatangus*, but remarks that Echinoid genera are now-a-days instituted on ridiculously finikin distinctions. *M. lorioli*, n. sp., Lower Eocene, Gebel Haridi, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 48, pl. iv.
- Melitella*; GREGORY in BATHER (19) p. 317.
- Mellita*; GREGORY in BATHER (19) p. 317. *M. sexforis*; CONANT (71).
- M. testudinata*, breeding period; WILSON (355) p. 351.
- †*Melonechinus* M. & W. supersedes *Melonites* Norw. & Owen non Lam.; LAMBERT (187) p. 53.
- †*Melonites*; GREGORY in BATHER (19) p. 304: vide ante.
- †*Melonitidae*, diagnosis; GREGORY in BATHER (19) p. 304: altered to *Melonechinidae*; LAMBERT (187) p. 53.
- †*Melonitoida*, Order, diagnosis, divided into Famm. *Palaeochinidae*, *Melonitidae*, *Lepidesthidae*; GREGORY in BATHER (19) p. 303.
- Meoma*; GREGORY in BATHER (19) p. 323.
- †*Mesodiadema*, distinguished from *Hemipedinina* (p. 28), diagnosis (p. 31), considered as the source of all *Pedininae* (p. 32), archaic characters (p. 36); *M.?* *admeto* Quenst. non Münster. (sub *Cidaris*; Die Echin. pl. lxviii, f. 143, non 144) (p. 32); *M.?* *blaburensis* Quenst. (sub *Leptocidaris*) (p. 31); *M. criniferum* Quenst. (sub *Cidaris*) (p. 31); *M. olifex* Quenst. (sub *Cidaris*) (p. 31); *M. simplex*, n. sp., "Lias moyen de Venarey" (p. 31), "Charmouthien de Mussy" explic. de pl. i, f. 10: LAMBERT (187).
- Mespilia*; GREGORY in BATHER (19) p. 313. *M. globulus*, microstructure of spine; HESSE (159) p. 243.
- Metalia*; GREGORY in BATHER (19) p. 323: incl. *Plagionotus* Ag. and *Plagiobrissus* Pomel; SCHLUETER (299) p. 362. *M. maculosa*; ANDERSON (11) p. 16: microstructure of spine; HESSE (159) p. 261. *M. sternalis*, habitat, distrib., measurements; BEDFORD (25) p. 286.
- †*Metaporhinus*; GREGORY in BATHER (19) p. 321. *M. convexus*, internal cast from Camporo, measured; MARIANI (222) p. 410.
- †*Micraster*; GREGORY in BATHER (19) p. 323. *M. sp.*, microstructure of spine; HESSE (159) p. 260, text-fig. *M. breviporus*, incl. *M. borchhardti* Hag.; DEECKE (82) p. 42. *M. coranguinum*; REIS (278) p. 3: incl. *Spatangus cuneatus* Hag.; DEECKE (82) pp. 71, 72: quoted by C. F. Roemer from Recklinghausen is perhaps *Diplodetus recklinghausenensis*; SCHLUETER (299) p. 368: and var. *latior*; DIBLEY (92) pp. 484, 486, 488, 489, 493: var. *latior* as zonal fossil; ROWE (288) p. 303: var. *rostratus* as zonal fossil; ROWE (288) p. 300. *M. corbovis*; DIBLEY (92) pp. 486, 488, 493: STRAHAN (322): as zonal fossil; ROWE (288) p. 313, 316, 320. *M. cortestudinarium*; DEECKE (82) pp. 92, 94: DIBLEY (92) pp. 490, 493: STRAHAN (322): as zonal fossil; ROWE (288) pp. 303, 308, 328. *M. cf. cortestudinarium*, descr.; PETRACZEK (265) p. 35. *M. decipiens*, incl. *M. cortestudinarium* Auctt. from Miélande; PAQUIER (257) p. 427, 436. *M. gibbus*; REIS (278) p. 4. *M. glyphus*; SCHMIDT (301) p. cxcviii. *M. leskei*; DIBLEY (92) p. 486,

- 488, 493: as zonal fossil; ROWE (288) p. 313. *M. normanniae*; RIAZ (281) p. 770. *M. praecursor*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 303, 308. *M. rostratus* Bucaille, validity and horizontal extension; FORTIN (114): the sp. not due to Bucaille but to Mantell; LAMBERT in Review of FORTIN (113). *M. tercensis*; GROSS-OUVRE (145) p. 65.
- Microcyphus*; GREGORY in BATHER (19) p. 313.
- +*Microdiadema*; GREGORY in BATHER (19) p. 309.
- +*Microlampas*; GREGORY in BATHER (19) p. 321.
- +*Micropedina*; GREGORY in BATHER (19) p. 310. *M. olisoponensis* (pp. 155, 172, 179, 193); *M. rotularis* (p. 184): CHOFFAT (62).
- +*Micropsina*; GREGORY in BATHER (19) p. 313.
- +*Micropsis*; GREGORY in BATHER (19) p. 310. +*M. fraasi*, Mid. Eocene; FOURTAU (115) p. 34. +*M. mokattamensis*; FOURTAU (116) p. 482.
- Micropyga*; GREGORY in BATHER (19) p. 309.
- Milletia*; GREGORY in BATHER (19) p. 321.
- +*Miocidaris* Doederl., relations to *Eotiaris* (p. 40); *M. amalthei* Quenst. (sub *Cidaris*) from Charmouthian of Venarey (Côte-d'Or) plates only, previous alleged occurrences in France refer to *Rhabdocidaris moreau* (p. 41, pl. i): LAMBERT (187).
- +*Miorthopsis* Pomel, based on 'hemiliocyclic' apex, "une disposition secondaire due au développement du périprocte et insuffisante pour justifier le genre"; LAMBERT (187) p. 29.
- +*Miotoxaster exilis*; CHOFFAT (62) p. 185.
- +*Mistechinus sickembergeri* [sic], n. sp., Mid. Eocene, N. of Minieh, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 32, pl. ii.
- Moir*a (vel *Moera*); GREGORY in BATHER (19) p. 323: key to French spp.; ACLOQUE (1) p. 464. *M. atropos*, breeding period; WILSON (355) p. 351.
- Moiropsis*; GREGORY in BATHER (19) p. 323.
- +*Monodiadema*, distinguished from *Eodiadema*; LAMBERT (187) p. 35.
- Monophora*; GREGORY in BATHER (19) p. 317.
- Monoplacida*, rejected (see general paragraph supra); LAMBERT (187) p. 53.
- +*Monostychia*; GREGORY in BATHER (19) p. 318. *M. australis*?; TATE (326) p. 111.
- Mortonia*; GREGORY in BATHER (19) p. 317.
- Moulinsia*; GREGORY in BATHER (19) p. 317.
- Nacospatangus*; GREGORY in BATHER (19) p. 323.
- +*Neocatopygus*; GREGORY in BATHER (19) p. 321.
- Neolampas*; GREGORY in BATHER (19) p. 321.
- Neopneustes*; GREGORY in BATHER (19) p. 323.
- +*Nucleolites*, incl. *Echinobrissus* (q.v.); GREGORY in BATHER (19) p. 320: place in phylogeny; LAMBERT (187) p. 49.
- Nucleolitidae*, diagnosis; GREGORY in BATHER (19) p. 320.
- +*Nucleopygus*; GREGORY in BATHER (19) p. 320.
- +*Offaster*; GREGORY in BATHER (19) p. 321. +*O. pilula*; FORTIN (113): as zonal fossil; ROWE (288) pp. 333, 342.
- Oligopodia*; GREGORY in BATHER (19) p. 320.
- Oligoporinae*, nov. tribe of *Echininae*, with sub-tribes *Pleurechinae*, *Triplechinae*, *Schizechinae*; LAMBERT (187) p. 54.
- +*Oligoporus*; GREGORY in BATHER (19) p. 304. *O.?* *minutus*, redeser., measurements; BEEDE (29) p. 49, pl. vii.
- Oligopygus*; GREGORY in BATHER (19) p. 320.
- +*Oolaster*; GREGORY in BATHER (19) p. 321.
- +*Opechinus*; GREGORY in BATHER (19) p. 312.
- +*Opissaster cotteau*i, vide etiam sub *Schizaster*.



- Oppenheimia* **nom. nov.** pro *Lambertia* (q.v.) Oppenheim 1899, non Desvoidy 1863 nec Souverbie 1869; COSSMANN (73): accepted; OPPENHEIM (251) p. 338: only differs from *Atelospatangus* by the interior fasciole, the existence of which, however, is very doubtful and not shown in the figure; LAMBERT in Review.
- +*Oriolampas*; GREGORY in BATHER (19) p. 321.
- +*Ornithaster*; GREGORY in BATHER (19) p. 323.
- +*Orthechinus*, incl. *Gagara*; GREGORY in BATHER (19) p. 310. *O. (Triplacidia) biarritzensis*; OPPENHEIM (251) p. 87.
- Orthocidarinae*, **n. sub-fam.** of *Cidaridae*; LAMBERT (187) p. 53.
- +*Orthocidaris*; GREGORY in BATHER (19) p. 302.
- Orthognatha* Bernard rejected; LAMBERT (187) p. 55.
- Ortholophinae*, diagnosis; GREGORY in BATHER (19) p. 312.
- Ortholophus*; GREGORY in BATHER (19) p. 312.
- Orthoporinae*, **nov.** tribe of *Echininae*, with sub-tribes *Prototiarinae*, *Cotteaudinae*, *Temnechinae*; LAMBERT (187) p. 54.
- Orthopsidae*, diagnosis; GREGORY in BATHER (19) p. 308.
- +*Orthopsis*; GREGORY in BATHER (19) p. 308: distinguished from *Hemipeditina*, genotype is *Cidaris miliaris* d'Arch.; LAMBERT (187) p. 28. *O. davidsoni*, vide sub *Hemipeditina*. *O. flovesti*, maintained; *O. globosa*, its aberrant nature, a return to *Mesodiadema* features: LAMBERT (187) p. 29. *O. microgramma*, vide sub *Hemipeditina*. *O. miliaris*; CHOFFAT (62) pp. 166, 172, 193: Egyptian specimens of small size; FOURTAU (115) p. 20. *O. morgani*, its aberrant nature, a return to *Diademopsis*; *O. ovata*, maintained; *O. peroni*, maintained: LAMBERT (187) p. 29. *O. repelini*; CHOFFAT (62) p. 184. *O. repellini*; KILIAN & LORY (170) p. 56. *O. ruppeli*, vide sub *Diadema*. *O. saemanni*, vide sub *Hemipeditina*. *O. similis* Stoliczka, Senonian, India "me paraît constituer le type d'un genre particulier, *Stephanopsis*" (q.v.); *O. varusensis*, maintained: LAMBERT (187) p. 29.
- +*Oviclypeus*; GREGORY in BATHER (19) p. 316.
- +*Ovulaster*; GREGORY in BATHER (19) p. 321.
- +*Pachyclypeus*, referred to *Pygasteridae* (p. 316), to *Echinoneidae* (p. 320); GREGORY in BATHER (19).
- +*Palaeochinidae*, diagnosis; GREGORY in BATHER (19) p. 304.
- +*Palaeochinoidea*, Sub-class, rejected; GREGORY in BATHER (19) p. 299. See also General Paragraph, supra.
- +*Palaeochinus*; GREGORY in BATHER (19) p. 304, fig. xvi.
- Palaeobrissus*, referred to *Spatangidae adestinae*; GREGORY in BATHER (19) p. 322.
- +*Palaeocidaris* syn. of *Echinocr.* (q.v.); LAMBERT (187) p. 42.
- +*Palaeodiscidae*, diagnosis; GREGORY in BATHER (19) p. 300.
- +*Palaeodiscus*, discussed; GREGORY in BATHER (19) p. 301.
- +*Palaeolampas*; GREGORY in BATHER (19) p. 321.
- +*Palaeopedina* [errore *Palae-*, *Paleo-*, *Paloe-*, *Paloeo-*, et *Poeloeo-pedina*], **n. g.** allied to *Hemipeditina*, with genotype *Diadema globulus* Ag. (vide infra) (p. 22), place in phylogeny (p. 49); LAMBERT (187). *P. bonei*, vide sub *Hemipeditina*. *P. globulus* (Ag.), accepted in sense of Cotteau (Paleont. franc. pl. 385), i.e. Leymerie's diagnosis not figures, = Agassiz cast of *Hemicidaris buccalis* T. 65 (p. 22, text-figg. 4-6); *P. minima* Ag. (sub *Diadema*), incl. *Diademopsis exigua* Cott. as young (p. 27); *P. pacomei* Cott. (sub *Diademopsis*), discussed (p. 27): LAMBERT (187).
- Palaeopneustes*; GREGORY in BATHER (19) p. 322. *P. sp. nondescr.*, 8° 37' N., 75° 37' E., 224 fms., 200 specimens, colour; ANDERSON (11) p. 7. *P. niasicus*, **n. sp.**, 470 metres S. Nias Channel, L. DOEDERLEIN photo, but no description; CHUN (63) p. 362.
- Palaeostoma*, incl. *Leskia*; GREGORY in BATHER (19) p. 323.
- Palaeostomidae*, diagnosis; loc. cit.



- Palaeotropus*; loc. cit. *P. hironellei*; RICHARD (282) p. 79, figg. 28, 29.  
*Paleopedina*, vide *Palaeopedina*.  
*Paloeopedina*, vide *Palaeopedina*.  
†*Parabrissus pseudoprenaster*; OPPENHEIM (251) p. 112.  
†*Paracidaris* Pomet, based on grouping of primaries which is accidental and exceptional only; LAMBERT (187) p. 37.  
†*Paradoxechinus*; GREGORY in BATHER (19) p. 312.  
†*Paralampas*; op. cit. p. 321.  
*Parasalenia*; op. cit. p. 313. *P. gratiosa*, Invisible Bank, Andaman Is.; ANDERSON (11) p. 16.  
†*Pedina*; GREGORY in BATHER (19) p. 309, fig. xxvii. *P. antiqua*, relations to *Diademopsis*; LAMBERT (187) p. 30. *P. inflata*; GREPPIN (138) p. 189.  
*Pedinidae*, diagnosis; GREGORY in BATHER (19) p. 309.  
*Pedininae*, sub-fam. of *Diademataidae* with tribes *Orthopsinae* and *Climapedinae*; LAMBERT (187) p. 53.  
†*Pedinopsis*; GREGORY in BATHER (19) p. 313. *P. desori*; CHOFFAT (62) p. 185. *P. meridanensis*; KILIAN & LORY (170) p. 56.  
†*Pedinothuria*; GREGORY in BATHER (19) p. 310.  
*Pelanechininae*, diagnosis; loc. cit.  
†*Pelanechinus*; loc. cit.  
†*Peltastes*; op. cit. p. 306: place in phylogeny; LAMBERT (187) p. 49. *P. studeri*; KILIAN & LORY (170) p. 60.  
†*Periaster roachensis*, n. sp., Turonian of El Gâa, Abou Roach, Egypt, perhaps = *Hemiasterourneli* Auctt., type in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 24, pl. i: not to be confused with *Hemiaster pseudo-fourneli*; FOURTAU (120) p. 630.  
*Pericosmus*; GREGORY in BATHER (19) p. 323. *P. sp.*, hitherto only known fossil, now found in Moxos Is. and off Port Blair, 55 fms.; ANDERSON (11) pp. 5, 10. †*P. marianii* (p. 552), †*P. spatangoides* (pp. 550-552); ALESSANDRI (6).  
†*Perischocidaridaris*, incl. *Homotoechus*; GREGORY in BATHER (19) p. 304.  
†*Perischodomus*; op. cit. p. 302.  
†*Permocidaridaris*, n. g. of *Archaeocidaridae*, comprising *P. coaevus* Quenst. (sub *Cidaridaris*), *P. forbesi* Kon. (sub *Cidaridaris*) as genotype, and *P. verneuili* King (sub *Archaeocidaridaris*); LAMBERT (187) pp. 39, 47.  
*Peronella decagonalis*; ANDERSON (11) p. 7.  
†*Peronia*; GREGORY in BATHER (19) p. 308.  
†*Phalacrechinus*, n. g. of *Echininae* "à tubercules incrénelés, limités à la face ovale," with genotype *Pleurodiadema gauthieri* Cott. of Bathonian; LAMBERT (187) p. 37.  
†*Phalacropedina*, n. s.-g., a name that could be given to a sub-genus that might be carved out of *Hemipedina* by taking *H. guerangeri* as type, along with *H. calva*, *H. pusilla*, and *H. minima*, "si l'on tient à créer...un sous-genre nouveau"; LAMBERT (187) p. 30. [Mr Lambert kindly informs me that he does consider this a subgenus, with "une valeur au moins égale à *Diademopsis*."]†  
†*Pholidocidaridaris*; GREGORY in BATHER (19) p. 305.  
*Phormosoma*; op. cit. p. 311. *P. sp.*, Nias Channel; CHUN (63) p. 362.  
*P. uranus*, galls of parasitic copepod; RICHARD (282) p. 80, figg. 30, 32.  
*Phyllacanthus annulifera*; ANDERSON (11) p. 5. *P. dubia*, microstructure of spine; HESSE (159) p. 236. *P. imperialis*, ditto; loc. cit.: joints; STEWART (318).  
†*Phyllobrissus*; GREGORY in BATHER (19) p. 321. *P. duboisi*; BAUMBERGER & MOULIN (23) pp. 167, 176. *P. gresslyi*; CHOFFAT (62) p. 184. *P.*, cf. *gresslyi*; BAUMBERGER & MOULIN (23) p. 171.  
*Phylloclypeus*; GREGORY in BATHER (19) p. 321.  
†*Phymechinus*; op. cit. p. 309. *P. benoisti*, n. sp., Vesulian of l'Indre,

allied to *P. mirabilis*; LAMBERT (186) p. 488, pl. viii: BENOIST (31) p. 4.

+*Phymopedina*, distinguished from *Hemipedina*; LAMBERT (187) p. 28.

+*Phymosoma* Haime 1853 preferred to *Cyphosoma* Ag. (q. v.), but "*Phymosoma* Shipley, récemment proposé pour des Holothuries devra être abandonné et je propose de le remplacer par *Prophymsoma*" (q. v.); LAMBERT (187) p. 54. *P. sp.* nondescr; SCHLUETER (297) p. 420. *C.* [i.e. *P.*] *abbatei*; BLANCKENHORN (36) p. 34: Santonian not Turonian; FOURTAU (115) p. 21. *C.* [i.e. *P.*] *alcantarense*; CHOFFAT (62) pp. 172, 179, 193. *C.* [i.e. *P.*] *corollare*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) p. 304. *C.* [i.e. *P.*] *cribrum*; OPPENHEIM (251) p. 86. *C.* [i.e. *P.*] *debile*; CHOFFAT (62) p. 184. *C.* [i.e. *P.*] *granulosum*, microstructure of spine; HESSE (159) p. 223. *C.* [i.e. *P.*] *koenigi*; DIBLEY (92) pp. 488, 489, 493: as zonal fossil; ROWE (288) p. 304: microstructure of spine; HESSE (159) p. 222. *P. loryi*; KILIAN & LORY (170) p. 56. *C.* [i.e. *P.*] *microstoma*; CHOFFAT (62) p. 184. *P. princeps*; BRYDONE (51) p. 12: (p. 71) and *P. cf. princeps* (p. 55); DEECKE (82). *C.* [i.e. *P.*] *radiatum*; DEECKE (82) p. 43: DIBLEY (92) pp. 486, 493: as zonal fossil; ROWE (288) p. 313. *C.* [i.e. *P.*] *ribeiroi*; CHOFFAT (62) p. 185. *C.* [i.e. *P.*] *simplex*; BRYDONE (51) p. 12. *C.* [i.e. *P.*] *spatuliferum*, as zonal fossil; ROWE (288) p. 304. *P. taeniatum*; DEECKE (82) p. 71. *C.* [i.e. *P.*] *wetherelli*; BRYDONE (51) p. 12.

*Phymosominae*, n. sub-fam. of *Echinometridae*; LAMBERT (187) p. 54.

+*Physaster*, vide sub *Inflataster*.

*Pileatoida*, Sub-order of *Exocysta*, comprises *Pygasteridae* and *Galeritidae*; LAMBERT (187) p. 55.

+*Pileus*, referred to *Pygasteridae* (p. 316) to *Echinoneidae*; GREGORY in BATHER (19) p. 320.

*Placodiadema*; GREGORY in BATHER (19) p. 309, fig. xxv.

*Plagiobrissus*, vide *Metalia*.

*Plagionotus*, vide *Metalia*.

*Platybrissus*; GREGORY in BATHER (19) p. 322. *P. roemeri*; ANDERSON (11) p. 5.

+*Plegiocidaris* Pomel, relations to *Eotiaris* (p. 40); *P. desori* Cott. 1857 (sub *Cidaris*) (p. 48); *P. ilminsterensis*, at May? (p. 47); *P. martini* Cott. (sub *Cidaris*) discussed (p. 40); *P. moorei* from couches à *Leptaena*, May, Calvados (p. 47); *P. senex*, n. sp., "la petite espèce du Rhétien d'Oberdorf, décrite sous le nom de *Cidaris desori*" [author and date not stated], non. *C. desori* Cott. 1857 (p. 48): LAMBERT (187).

*Plesianthus*; GREGORY in BATHER (19) p. 318. +*P. testudinarius*; WOLFF (360).

+*Plesiaster*, discussed (p. 363); *P. (?) cavifer*, n. sp. (? n. g., LAMBERT in Review), "Quadraten-Kreide," zone of *Becksia soekelandi*, Westphalia (p. 371, pl. xvii); *P. (?) cordiformis*, n. sp., Lower *Mucronatus* beds, Westphalia (p. 372, pl. xvi); *P. minor* Schluet. olim *Brissopsis* (? n. g. LAMBERT in Review), redescri. (p. 369, pl. xvi): SCHLUETER (299). *P. cf. recklinghausenensis* from Brunswick; SCHLUETER (297) p. 418.

+*Plesiocidaris* Pomel, apparently retained as subgen. of *Pseudocidaris* and with genotype *P. alpina* Ag. (sub *Hemicidaris*), considered as source of *Hemicidarinae*; LAMBERT (186) p. 482.

+*Plesiocidaroida*, Order, diagnosis, divided into Famm. *Tiarechinidae*, *Lysechinidae*; GREGORY in BATHER (19) p. 305.

+*Plesiodiadema insignitum*; CHOFFAT (62) p. 185.

+*Plesiolampas*; GREGORY in BATHER (19) p. 321.

+*Plesiospatangus cotteaui*, only the two genital pores of the left side present in this species; FOURTAU (115) p. 51: vide etiam sub *Euspatangus*.

*Pleurechinae*, nov. sub-tribe of *Oligoporinae*; LAMBERT (187) p. 54.

- Pleurechinus*; GREGORY in BATHER (19) p. 312.
- †*Pleurodiadema*; op. cit. p. 309. *P. gauthieri*, vide *Phalacrechinus*.
- †*Plistophyma*; GREGORY in BATHER (19) p. 309.
- Podocidaris*; GREGORY in BATHER (19) p. 308.
- Poeloeopedina*, vide *Palaeopedina*.
- †*Polycidaris*; GREGORY in BATHER (19) p. 302. *P. ludovici* (Menegh.); BETTONI (34) p. 11.
- †*Polycyphus*; GREGORY in BATHER (19) p. 310. *P. normannus*; BENOIST (31) pp. 3, 4.
- Polyplacida*, rejected (see general paragraph supra); LAMBERT (187) p. 53.
- Polyporinae* tribe of *Echininae*, with sub-tribes *Spherechininae*, *Trochalosominae*, *Heliocidarinae*, *Aerocladinae*; LAMBERT (187) p. 54.
- †*Pomelia*, **n. g.** of *Cassidulidae* allied to *Faujasia* (p. 66), with genotype *P. delgadoi*, **n. sp.**, Senonian of Portugal, type at Direct. trav. geol. Lisbon (p. 67, pl. vi); LORIOI (207).
- Porocidaris* sp.; KOEHLER (180) p. 815. *P. elegans* see *Dorocidaris*. †*P. schmideli*; OPPENHEIM (251) p. 85: FOURTAU (116) pp. 481, 490: et var. *aegyptica*, microstructure of spine; HESSE (159) p. 225. †*P. serrata*, ditto; loc. cit.
- Pourtalesia*, discussed; GREGORY in BATHER (19) p. 323. *P. sp.* Laccadive sea; ANDERSON (11) p. 10.
- Pourtalesiidae*, diagnosis, discussed; GREGORY in BATHER (19) p. 323.
- †*Prenaster*; loc. cit. *P. sp.* (p. 44), *P. alpinus* (p. 37); REIS (278). *P. arabicus*, **n. sp.**, Lower Eocene, Gebel Haridi, Egypt, type in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 46, pl. ii. *P. bericus*; OPPENHEIM (251) p. 111. *P. carinatus*, very different from other *Prenaster*, possibly *Cyclaster*; LAMBERT in Review of ANTHULA.
- †*Prodiadema* Pomel, maintained as sub-genus of *Gymnocidaris*, with genotype *Cidaris agassizi* Roem. but not *Hemicidaris cartieri*; LAMBERT (186).
- Progonolampas*, vide sub *Echinolampas justinae*.
- Proscutidae*, **n. fam.**, divided in sub-famm. *Echinocyaminae* and *Fibularinae*; LAMBERT (187) p. 55.
- Protocyamus*, **nom. nov.** pro *Echinites* Duncan, non Leske, nec Müller & Trosch., a genus of *Discoidiidae*; GREGORY in BATHER (19) p. 316.
- †*Prototiara*, rediagnosed, archaic characters (p. 36), relations to *Pleurodiadema*, considered as source of *Salmacinae*, *Arbaciadinae*, and *Echininae* (p. 37), genotype *P. jutieri* Cott. (sub *Pleurodiadema*), place in phylogeny (p. 50); LAMBERT (187).
- Prototiarinae*, **nov.** sub-tribe of *Orthoporinae*; LAMBERT (187) p. 54.
- Prymnetidae*, section of *Spatangidae*; GREGORY in BATHER (19) p. 322.
- Prymnodesminae*, ditto; op. cit., p. 323.
- Psammechinus*; GREGORY in BATHER (19) p. 313; key to French spp.; ACLOQUE (1) p. 463. *P. duciei* is a *Schizechinus*; FOURTAU (118) p. 138. †*P. dubius*; DOUXAMI (95) p. 420. †*P. gravesi*; PÁLFI (256) p. 64. †*P. hiselyi*; BAUMBERGER & MOULIN (23) p. 159. †*P. lyonsi* is a *Taxophyma*, s. g. of *Anapesus*; FOURTAU (118) p. 138. *P. militaris*, see II, F, viii; GIARD (127). †*P. mirabilis*, microstructure of spine; HESSE (159) p. 243. †*P. tenuis*; BAUMBERGER & MOULIN (23) pp. 171, 191. †*P. theveneti*; KILIAN & LORY (170) p. 56. †*P. woodwardii*, microstructure of spine; HESSE (159) p. 244.
- †*Pseudananchys* sp.; PAQUIER (257) p. 402.
- Pseudoboletia*; GREGORY in BATHER (19) p. 313.
- †*Pseudocatopygus*; GREGORY in BATHER (19) p. 321.
- †*Pseudocidaris* Etallon, revived with genotype *P. thumanni* [sic] Ag. (sub *Hemicidaris*); LAMBERT (186): place in phylogeny; LAMBERT (187) p. 50. *P. clunifera* and *P. crispicans*; CHOFFAT (62) p. 184. *P. peroni* vide sub *Asterocidaris*.



+*Pseudodesorella*; GREGORY in BATHER (19) p. 321.

+*Pseudodiadema*; GREGORY in BATHER (19) p. 309, figg. xxiii, xxiv: relations to *Eodiadema*; LAMBERT (187) p. 36. *P. alcantarense* pp. 150, 155, 163, 166, 172, 179, 185, 193), *P. bourgueti* (p. 184), *P. delgadoi*? (p. 184), *P. delicatulum* (p. 185); CHOFFAT (62). *P. diatretum*; CLARK (66) p. 339. *P. guerangeri*; CHOFFAT (62) pp. 150, 155, 163, 172, 185, 192. *P. interjectum*; CHOFFAT (62) pp. 150, 159, 163, 185, 193: redescribed from fresh specimens; LORIEL (207) p. 68, pl. vii. *P. lobatum*, microstructure of spine; HESSE (159) p. 219. *P. lusitanicum* (pp. 155, 172, 192), *P. macropygus* (pp. 150, 185); CHOFFAT (62). *P. mamillatum*; DEECKE (82) p. 24. *P. orbignyi*; BENOIST (31) p. 4: a Rauracian and Sequanian sp. now found in Vesulian, extraordinary example of specific longevity; LAMBERT (186) p. 487. *P. ornatum*; DIBLEY (92) p. 493. *P. pentagonum*; BENOIST (31) p. 3: GREPPIN (138) p. 197. *P. pseudodiadema*, type being lost, specimen from Neuchatel (Agassiz Echin. Suisses, pl. xvii, ff. 49, 53) is taken as neotype, and compared with *P. sequini*; LAMBERT (186) p. 487. *P. rotulare*; BAUMBERGER & MOULIN (23) p. 159: KILIAN & LORY (170) p. 52. *P. schluteri* (p. 185), *P. scruposum* (p. 185), *P. aff. sculptile* (pp. 172, 193); CHOFFAT (62). *P. sequini*, n. sp., Vesulian of l'Indre; LAMBERT (186) p. 486, pl. viii: BENOIST (31) p. 4. *P. somaliense*, n. sp., Bihendula Limest. (Bathonian or Callovian), S. of Berbera, Somaliland; GREGORY (136) p. 41, figg. 4, 5: not a *Pseudodiadema*, but intermediate between *Micropsidia* & *Prototiara* by the side of *Progonechinus*; LAMBERT in Review. *P. subcomplanatum*; BENOIST (31) p. 3. *P. superbum*; KOBY (177) p. 209: LORIEL (206) p. 182. *P. variolare*, microstructure of spine; HESSE (159) p. 223.

+*Pseudopedina*; GREGORY in BATHER (19) p. 309.

+*Pseudosalenia delgadoi*; CHOFFAT (62) p. 185.

+*Pygaster*; GREGORY in BATHER (19) p. 316, figg. xi, xxxv: place in phylogeny; LAMBERT (187) p. 48.

*Pygasteridae*, diagnosis; GREGORY in BATHER (19) p. 316: divided in sub-famm. *Holactypinae* and *Discoidinae*; LAMBERT (187) table B, p. 50.

*Pygastrides*; GREGORY in BATHER (19) p. 316.

+*Pygaulus*; GREGORY in BATHER (19) p. 320. *P. cylindricus* (pp. 53, 57), *P. depressus* (p. 53), *P. desmoulinsi* (p. 56); KILIAN & LORY (170).

+*Pygorhynchus*; GREGORY in BATHER (19) p. 321.

+*Pygorhytis*; GREGORY in BATHER (19) p. 321.

+*Pygospatangus*; GREGORY in BATHER (19) p. 323.

+*Pygurostoma*; GREGORY in BATHER (19) p. 321.

+*Pygurus*; GREGORY in BATHER (19) p. 321: place in phylogeny; LAMBERT (187) p. 49. *P. sp.*; KILIAN & LORY (170) p. 51. *P. blumenbachi*; DEECKE (82) p. 25: HUENE (166) p. 365. *P. buchi* (p. 171), *P. gillieron* (p. 166), *P. rostratus* (pp. 171, 190); BAUMBERGER & MOULIN (23). *P. cf. rostratus*; CHOFFAT (62) p. 184.

+*Pyrina*; GREGORY in BATHER (19) p. 320. *P. cylindrica*; KILIAN & LORY (170) pp. 56, 57. *P. desmoulinsi*; DEECKE (82) p. 71. *P. globosa*; CHOFFAT (62) p. 184. *P. incisa*, loc. cit.: BAUMBERGER & MOULIN (23) p. 171. *P. junqueiroensis*; CHOFFAT (62) p. 185. *P. pygoea*; KILIAN & LORY (170) pp. 37, 50, 52.

+*Rachiosoma paucituberculatum*; KILIAN & LORY (170) p. 52.

+*Radiocyphus*, vide *Arachniopleurus*.

*Regularia Ectobranchiata*, Subclass, diagnosis, incl. only Order *Diademoida*; GREGORY in BATHER (19) p. 306.

*Regularia Endobranchiata*, Subclass, diagnosis, divided into Orders, *Bothriocidaroida*, *Cystocidaroida*, *Cidaroida*, *Melonitoida*, *Plesiocidaroida*; GREGORY in BATHER (19) p. 300 et sqq.



*Rhabdocidarinae*, **nov.** tribe of *Stereocidarinae*; LAMBERT (187) p. 53.

*Rhabdocidaris*; GREGORY in BATHER (19) p. 302: relations to *Leiocidaris* discussed; OPPENHEIM (251) p. 84. †*R. anglosuevica*, microstructure of spine (p. 217), †*R. anhaltina*, ditto (p. 224); HESSE (159). *R. annulifera*, incl. *Schleinitzia crenularis*, habitat, distrib., growth-changes; BEDFORD (25) p. 274, pl. xxi. *R. baculosa*, Mauritian var. of de Loriol is constant in Andaman Sea and is separate sp.; ANDERSON (11) p. 5. *R. bispinosa*, valid; BEDFORD (25) p. 273. †*R. bonolai*, **n. sp.**, Cenomanian, beds with *Neolobites vibrayeanus*, Beharich oasis, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 8, pl. i. †*R. caprimontana*; KILIAN & LORY (170) p. 33: microstructure of spine; HESSE (159) p. 232: var. *remus*; BLEICHER & MIEG (40). †*R. cascaesensis*; CHOFFAT (62) p. 184. †*R. copeoides*, microstructure of spine; HESSE (159) p. 232. †*R. crameri*; BLANCKENHORN (36) p. 39: notes; FOURTAU (115) p. 17. †*R. delgadoi*; CHOFFAT (62) p. 184. †*R. dubia*; AIRAGHI (4) p. 69. †*R. horrida*; GREPPIN (138) p. 187: MUEHLBERG (236) p. 306: STRUEBIN (324) pp. 335, 336, 337: TOBLER (328) p. 291. †*R. imperialis*, probably incl. *Dorocidaris papillata* var. *calabra* De Stefani; AIRAGHI (4) p. 68. †*R. insueta*; CHOFFAT (62) p. 184. †*R. jauberti* (pp. 50, 52), †*R. kiliani* (pp. 49, 50); KILIAN & LORY (170). †*R. lacertosa*; CHOFFAT (62) p. 184. †*R. libyensis*, the trivial name is "sinon un barbarisme, tout au moins un néologisme parfaitement inutile"; FOURTAU (118) p. 137. †*R. maxima*, microstructure of spine; HESSE (159) p. 218. †*R. mespilum*; OPPENHEIM (251) p. 84. †*R. moreaui* vide sub *Miocidaris amalthæi*. †*R. navillei*, an Indian sp. from Egypt, fragments descr.; FOURTAU (115) p. 29. †*R. nobilis*; KILIAN & LORY (170) p. 15: microstructure of spine; HESSE (159) p. 233. †*R. orbignyana*, ditto; loc. cit. †*R. schlumbergeri*; CHOFFAT (62) p. 184. †*R. trispinata*, microstructure of spine; HESSE (159) p. 233. †*R. tuberosa*; BAUMBERGER & MOULIN (23) p. 171: CHOFFAT (62) p. 184: KILIAN & LORY (170) p. 50.

†*Rhabdopleurus*, vide *Glyphocyphus*.

*Rhinobrissus*; GREGORY in BATHER (19) p. 323.

†*Rhoëchinus*; op. cit. p. 304.

*Rhynchopygus*; op. cit. p. 321.

*Rotula*, and *R. augusti*; op. cit. p. 317, fig. ix.

*Rotuloidea*; GREGORY in BATHER (19) p. 317.

*Runa*; loc. cit.

*Salenia*; op. cit. p. 306, figg. xiii, xvi, xix. *S. sp.*; ANDERSON (11) p. 5.

†*S. bellula*; CLARK (66) p. 339. †*S. choffati*; CHOFFAT (62) p. 185. †*S. fraasi*, redescr. from Santonian of Egypt, differences from De Loriol's description; FOURTAU (115) p. 18. †*S. granulosa*; DEECKE (82) p. 71: as zonal fossil; ROWE (288) p. 318. †*S. lusitanica*; CHOFFAT (62) p. 185. †*S. prestensis*; KILIAN & LORY (170) pp. 56, 57. †*S. cf. prestensis*; FICHEUR (108) p. 572. †*S. pygmaea* and †*S. scutigera*; DEECKE (82) p. 71. †*S. tumidula*; CLARK (66) p. 339.

*Saleniidae*, diagnosis; GREGORY in BATHER (19) p. 306.

*Salmacis*; op. cit. p. 312. †*S. sp.*; WOLFF (360). *S. globator* Bell (an L. Agass.?), incl. "*S. sulcatus*" Sladen, habitat, colour of spines, measurements (p. 282, pl. xxii); *S. rarispina*, probably = *Echinus sphaeroides* Linn., measurements (p. 283); *S. sulcata*, distrib., relation to *S. alexandri*, colour in life, measurements (p. 281, pl. xxii): BEDFORD (25).

*Salmacopsis*; GREGORY in BATHER (19) p. 313.

†*Sarsella*; op. cit. p. 323.

†*Scagliaster*, literary history; SCHLUETER (299) p. 375.

†*Scaptodiadema*, distinguished from *Hemipedina*; LAMBERT (187) pp. 28, 30.

- Schizaster*; GREGORY in BATHER (19) p. 323. *S. sp.*; ANDERSON (11) p. 6: +VERRI & ANGELIS D'OSSAT (339) p. 259: Bouvet Id.; CHUN (63) p. 495: microstructure of spine; +HESSE (159) p. 260. +*S. ambulacrum*; OPPENHEIM (251) p. 110. +*S. ameghinoi*; HATCHER (154) pp. 101, 102. +*S. canaliferus*; MELI (230) p. 332: descr. and measurements; COPPA (72) p. 36: microstructure of spine; HESSE (159) p. 259. +*S. foveatus*; FOURTAU (116) p. 482. *S. fragilis*; DOEDERLEIN (93) p. 197: KNIPOVICH (175) pp. 452, 458. +*S. cf. karreri*; LOERENTHEY (204) p. 61. +*S. legraini*, **n. sp.**, Helvetian of Gebel Ramlich, Egypt, type in Mus. Hist. Nat., Paris; FOURTAU (115) p. 60, pl. iii. +*S. lucidus*; OPPENHEIM (251) p. 110. *S. moseleyi*; MEISSNER (229) p. 15. *S. philippii*, measurements of several specimens, much variation; loc. cit. +*S. rimosus*; OPPENHEIM (251) p. 110. +*S. santamariai* [sic], **n. sp.**, Lower Eocene, Gebel Haridi, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 44, pl. iii. +*S. studeri*; OPPENHEIM (251) p. 111. +"*S. thebensis* Lor." Gregory, is *Opissaster*; FOURTAU (118) p. 136. +*S. vicinalis*; OPPENHEIM (251) p. 111.
- Schizechinae*, **nov.** sub-tribe of *Oligoporinae*; LAMBERT (187) p. 54.
- +*Schleinitzia crenularis*, vide *Rhabdocidaris annulifera*.
- +*Scolopendrites* Gesner 1565, is a spine of a *Tiaris*; LAMBERT (186) p. 483.
- Scutella*; GREGORY in BATHER (19) p. 317, fig. xxxv. *S. excentricus*, meaning of its asymmetry; HARRINGTON (152). +*S. innesi*; DEPÉRET (89) p. 402. +*S. interlineata*, by position of periproct approaches *Scutulum* Tournouer; LAMBERT in Review of MERRIAM (175) Zool. Rec. 1899. +*S. paulensis* not a mere var. of *S. subrotunda* as maintained by Gregory; FOURTAU (118) p. 137. +*S. striatula*, vide *Echinarachnius excentricus*. +*S. subrotunda*; ?LOERENTHEY (204) p. 59: measurements; COPPA (72) p. 35. +*S. truncata*, ditto; COPPA (72) p. 36.
- Scutellidae*, diagnosis; GREGORY in BATHER (19) p. 317: divided into sub-famm. *Arachninae* and *Dendrasterinae*; LAMBERT (187) p. 55.
- +*Scutellina*; GREGORY in BATHER (19) p. 317. *S. patella*; CLARK (64) p. 5: TATE (326) p. 111.
- Scutulinae* (vel *Scrutulinae* [sic]?) **nov.** tribe of *Dendrasterinae*; LAMBERT (187) p. 55.
- +*Sismondia*; GREGORY in BATHER (19) p. 317. *S. occitana*; PÁLFY (256) p. 64. *S. rosacea*, distinguished from *S. planulata*; OPPENHEIM (251) p. 90.
- Spatagocystis*, referred to *Spatangidae Adetinae* (p. 322), and to *Pourtalesiidae* (p. 324); GREGORY in BATHER (19) fig. xlv.
- Spatangidae*, diagnosis, divided into sections—*Adetinae*, *Prymnadetinae*, and *Prymnodesminae*; op. cit. p. 321.
- +*Spatangomorpha*; GREGORY in BATHER (19) p. 323.
- Spatangus*; loc. cit. & figg. xi, xxxviii, xlv, xlv: key to French spp.; ACLOQUE (1) p. 464: key to Belgian spp.; LAMEERE (188) p. 36: +*S. sp. Miocene*; NELLI (240) p. 415: microstructure of spine; HESSE (159) p. 258. +*S. austriacus*?; DEL BUE (87) p. 129. +*S. corsicus*; ALESSANDRI (6) p. 552. +*S. hoffmanni*, microstructure of spine; HESSE (159) p. 258. +*S. pantanellii*, vide *Euspatangus minutus*. +*S. purpureus*; AIRAGHI (4) p. 74: microstructure of spine; HESSE (159) p. 259. *S. raschi*; CHUN (63) p. 158.
- Sperosoma sp.*; CHUN (63) p. 495. *S. grimaldii*; RICHARD (282) p. 79, fig. 27.
- Sphaerechchinae nov.* sub-tribe of *Polyporinae*; LAMBERT (187) p. 54.
- Sphaerechinus*; GREGORY in BATHER (19) p. 313: key to French spp.; ACLOQUE (1) p. 464. *S. granularis*, see II, F, viii; HERBST (156), VERNON (337, 338), & WINKLER (358): +AIRAGHI (4) p. 70: ♂; VIGUIER

- (343): galvanotaxis of larva; CARLGREN (56) p. 473: host of Copepod, and of a Lichomolgid; GIESBRECHT (129) p. 201: microstructure of spine; HESSE (159) p. 243.
- +*Stegaster*; GREGORY in BATHER (19) p. 321. *S. facki*, microstructure of spine; HESSE (159) p. 259: vide etiam sub *Cardiaster maximus*. *S. subtrigonatus* Catullo, olim *Nucleolithes*, incl. *N. cordiformis* Catullo, and *Stegaster*, vel *Holaster*, vel *Cardiaster*, vel *Scagliaster italicus* Ag. sp.; SCHLUETER (299) p. 376.
- +*Stenonia*; GREGORY in BATHER (19) p. 321. *S. tuberculata*, redescr., compared with *Echinocorys vulgaris*, *E. sulcatus*, and *Jeronia pyrenaica*; SIMIONESCU (306) p. 35, pl. iii.
- +*Stephanopsis*, n. g. with genotype *Orthopsis similis* (q. v.); LAMBERT (187) p. 29.
- Sterechinus antarcticus*, n. g. et sp. of *Echinidae*, 'Belgica' expedition; KOEHLER (180) p. 815.
- Stereocidarinae*, n. sub-fam. of *Cidaridae*, further divided into tribes *Rhabdo-* and *Lio-cidarinae*; LAMBERT (187) p. 53.
- Stereocidaris*; GREGORY in BATHER (19) p. 302, fig. xvii. *S.* sp. nondescr. (p. 158), *S.*, sp. nondescr., 470 metres, S. Nias Channel, L. DOEDERLEIN photo but no description (p. 363); CHUN (63). +*S. cretosa*, vide *Cidaris (Stereocidaris) subvesiculosa*. +*S. malum*; KILIAN & LORY (170) pp. 53, 56.
- Stereodermata* Keeping 1875, preferred to *Stereosomata* Duncan 1889, rejected (see general paragraph supra); LAMBERT (187) p. 53.
- Sternata*, Subord. of *Azlostomata*, diagnosis, divided into famm. *Collyritidae*, *Echinocorythidae*, *Spatangidae*, *Palaeostomidae*, *Pourtalessiidae*; GREGORY in BATHER (19) p. 321.
- +*Sternotaxis*, s. g. of *Holaster*; loc. cit.
- +*Stigmatopygus* d'Orb.; loc. cit.: syn. of *Cyrtoma* McClelland 1840; ORTMANN (255) p. 369.
- +*Stirechinus*; GREGORY in BATHER (19) p. 313.
- +*Stomechinus*; op. cit. p. 309. *S. bigranularis* from Vesulian; LAMBERT (186) p. 488; BENOIST (31) p. 4. *S. camarensis*; CHOFFAT (62) p. 184.
- S. denudatus*; KILIAN & LORY (170) p. 56. *S. michelini*; BENOIST (31) p. 4; LAMBERT (186) p. 488. *S. serratus*; BENOIST (31) p. 4: compared with *S. perlatus*; LAMBERT (186) p. 488.
- Stomopneustes*; GREGORY in BATHER (19) p. 313.
- +*Stomoporus*; op. cit. p. 323.
- Streptocidarinae*, n. sub-fam. of *Cidaridae*; LAMBERT (187) p. 53.
- Strongylocentrotidae*, diagnosis; GREGORY in BATHER (19) p. 313.
- Strongylocentrotus*; loc. cit. *S.* sp. nondescr.; CHUN (63) p. 158. *S. albus*, literature; MEISSNER (229) p. 8: microstructure of spine; HESSE (159) pp. 242, 245. *S. armiger*, ditto; HESSE (159) pp. 238, 245, pl. xii. *S. bullatus*, measurements of 1 specimen; MEISSNER (229) p. 9. *S. droebachiensis*; DOEDERLEIN (93) p. 196; HARTLAUB (153) pp. 172, 180, 185, 186; NORDGAARD (245) p. 8: +KNIPOVICH (176): +REKSTAD (280): microstructure of spine; HESSE (159) p. 243: food for foxes; LUCAS (208) p. 126. *S. franciscanus*, artificial parthenogenesis; LOEB (201). *S. gibbosus*, literature; MEISSNER (229) p. 9. *S. lividus*, see II, F, viii; VERNON (337, 338): +SCALIA (295) p. 9: in crowds but not boring; BEAUMONT (24) pp. 755, 756: galvanotaxis of larva; CARLGREN (56) p. 470: host of Copepod; GIESBRECHT (129) p. 201: microstructure of spine; HESSE (159) pp. 240, 243, pl. xii: parthenogenesis; VIGUIER (343). *S. purpuratus*, artificial parthenogenesis; LOEB (201): microstructure of spine; HESSE (159) p. 243. *S. tuberculatus*, ditto; HESSE (159) pp. 240, 245.
- Studeria*; GREGORY in BATHER (19) p. 321.
- +*Taxophyma lyonsi*, vide sub *Psammechinus*.



- Temnechininae*, **nov.** sub-tribe of *Orthoporinae*; LAMBERT (187) p. 54.
- Temnechinus*; GREGORY in BATHER (19) p. 312.
- +*Temnocardaris*; **op. cit.** p. 302. *T. danica*; GRÖNWALL (143) p. 71.
- Temnopleuridae*, diagnosis, divided into subfam. *Glyphocyphinae*, *Ortholophinae*, *Temnopleurinae*; GREGORY in BATHER (19) p. 312.
- Temnopleurinae*, diagnosis; **loc. cit.**
- Temnopleurus*; GREGORY in BATHER (19) p. 312, fig. xxxii. *T. reynaudi* (p. 281), *T. toreumaticus*, habitat, distrib., colour variation, measurements of different sized specimens (p. 280); BEDFORD (25).
- Tetracidarinae*, **n. sub-fam.** of *Cidaridae*; LAMBERT (187) p. 53.
- +*Tetracidaris*; GREGORY in BATHER (19) p. 303: not an *Archaeocidarid* but a *Cidarid*; LAMBERT (187) p. 53.
- Tetraplacida*, rejected (see general paragraph, supra); **loc. cit.**
- Thegaster*; GREGORY in BATHER (19) p. 317.
- +*Tholaster*; GREGORY in BATHER (19) p. 321.
- +*Thylechinus*; GREGORY in BATHER (19) p. 310.
- +*Tiarechinidae*, diagnosis; GREGORY in BATHER (19) p. 305.
- +*Tiarechinus*, discussed; **loc. cit.** and fig. xviii.
- +*Tiaridia*, distinguished from *Eodiadema*; LAMBERT (187) p. 35.
- Tiarinae*, **n. sub-fam.** of *Diademmatidae*, with tribes *Hemicidarinae*, *Eodiademinae*, *Pseudosaleninae*, *Pseudodiademinae*, *Diplopodinae* and *Glyphocyphinae*; LAMBERT (187) p. 53.
- +*Tiaris* Quenst., maintained as sub-genus of *Gymnocidaris*, with genotype *Hemicidaris quenstedti* Merian; comprises also *T. scolopendra* and all claviform spines wrongly attributed to *Hemicidaris crenularis*; LAMBERT (186) p. 483.
- +*Tiaromma carthusianum*; KILIAN & LORY (170) p. 56.
- +*Toxaster*; GREGORY in BATHER (19) p. 322. *T. broncoensis*; CHOFFAT (62) p. 185. *T. collegnoi*; KILIAN & LORY (170) pp. 56, 57: a topotype of *Echinospatagus leymeriei* Cott., which is a local var. only, differences from type noted; LORIOU (207) p. 58, pl. vi. *T. complanatus*; BAUMBERGER & MOULIN (23) p. 159: DOUXAMI (95) p. 419: LEBEDEV (192) p. 15: (= *retusus*); TOBLER (329) p. 145. *T. corvensis*; CHOFFAT (62) p. 185. *T. gibbus*; RIAZ (281) p. 766. *T. granosus*; BAUMBERGER & MOULIN (23) pp. 171, 200. *T. radula*; FICHEUR (108) p. 565. *T. retusus*; KILIAN & LORY (170) p. 48: Lam., name restored in place of *Echinospatagus cordiformis*, Barremian of La Turbie; RIAZ (281) p. 766: vide etiam *T. complanatus*. *T. sabugensis*; CHOFFAT (62) p. 185. *T. villei*; FICHEUR (108) p. 573.
- +*Toxobrissus lonigensis*; OPPENHEIM (251) p. 112.
- Toxopneustes*; GREGORY in BATHER (19) p. 313: key to French spp.; ACLOQUE (1) p. 464. *T. droebachiensis* and *T. lividus*, vide sub *Strongylocentrotus*. *T. pileolus*, microstructure of spine; HESSE (159) p. 244. *T. praecursor*, **n. sp.**, Lower Miocene of San Julian and Shell Gap (Upper Rio Chico), S. Patagonia; ORTMANN (255) p. 369. *T. variegatus*; CONANT (71): DUERDEN (100) p. 613 and (101) p. 620: microstructure of spine; HESSE (159) p. 244: breeding period; WILSON (355) p. 351.
- +*Trachyaster archiaci*; FOURTAU (116) p. 481.
- +*Trematopygus*; GREGORY in BATHER (19) p. 320.
- +*Triadocidaris*, relations to *Eotiaris* (p. 40), *T. liagora*, restr., vide *Eocidaridaris laubei* (p. 39); LAMBERT (187).
- Trigonocidaris*; GREGORY in BATHER (19) p. 312. *T.*, sp.; ANDERSON (11) p. 5.
- Triplacida*, rejected (see general paragraph supra); LAMBERT (187) p. 53.
- +*Triplacidia*; GREGORY in BATHER (19) p. 310.
- Triplechinae* A. Ag. = *Triplechinidae* A. Ag., reduced to sub-tribe of *Oligoporinae*; LAMBERT (187) p. 54.



- Triplechinidae*, diagnosis ; GREGORY in BATHER (19) p. 313.  
*Tripneustes*, incl. *Hipponoë* ; GREGORY in BATHER (19) p. 313.  
*Tripylus excavatus*, literature ; MEISSNER (229) p. 14.  
*Trochalosominae* Bather [sic ! i.e. nom. mut. pro *Leiosominae*, q.v. in Zool. Rec. 1897], a sub-tribe of *Polyporinae* ; LAMBERT (187) p. 55.  
 + *Trochodiadema*, n. g. of *Diadematidae* allied to *Pseudodiadema* (v. 70), with genotype *T. abramense*, n. sp., Turonian, Portugal, type at Direct. trav. geol. Lisbon ; LORIOI (207) p. 71, pl. vii. *T. abramense* and *T. ouremense* ; CHOFFAT (62) p. 166, 193.  
 + *Tuberaster* ; GREGORY in BATHER (19) p. 323.  
*Tylocidaris* ; GREGORY in BATHER (19) p. 302. + *T.*, cf. *sorigneti* ; KILIAN & LORY (170) p. 60.  
*Typocidaris* ; GREGORY in BATHER (19) p. 302.  
*Urechinus* ; GREGORY in BATHER (19) p. 321.  
 + *Vologesia* ; GREGORY in BATHER (19) p. 321.  
 + *Xenocidaris* ; GREGORY in BATHER (19) p. 302. *X. clavigera*, micro-structure of spine ; HESSE (159) p. 212.  
 + *Zeuglopleurus* ; GREGORY in BATHER (19) p. 312, fig. xxxi. *Z. rowei*, n. sp., Senonian of Kent, descr. in 1889 as young *Z. costulatus*, cotypes in Brit. Mus. and Rowe coll., *Z. costulatus* as restr. known only from Chalk Marl, Sussex ; GREGORY (137) : as zonal fossil ; ROWE (288) p. 300.

## (D.)—ASTEROIDEA.

*Asteroidea*, as sub-class of *Stelleroidea* (vide IV, A), general account of structure, diagnosis, rejection of the Orders *Palaeasteroidea* and *Euaisteroidea*, criticism of Stuertz's previous classifications of Palaeozoic *Ast.*, and arrangement of all in Sladen's two Orders, *Phanerozonia* and *Cryptozonia* (qq.v. infra) rediagnosed in extended sense ; GREGORY in BATHER (19) p. 239 et sqq. Bases of classification of Palaeozoic *Ast.*, arranged under the headings *Encrinasteriae-Phanerozonia*, *Encrinasteriae-Cryptozonia*, *Eustelleridae-Phanerozonia*, and *Eustelleridae-Cryptozonia* ; STUERTZ (325) pp. 206-210.

- Acantharchaster* ; GREGORY in BATHER (19) p. 251.  
*Acanthaster* ; op. cit. p. 258.  
*Acanthasterinae*, diagnosis ; loc. cit.  
*Amphiaster* ; GREGORY in BATHER (19) p. 254.  
*Anasterias* ; op. cit. p. 258.  
*Anthenea* ; op. cit. p. 253. *A. flavescens* ; BEDFORD (25) p. 295.  
*Antheneidae*, diagnosis ; GREGORY in BATHER (19) p. 253.  
*Anthenoides* ; loc. cit.  
*Aphroditaster* ; GREGORY in BATHER (19) p. 251.  
*Archaster* ; loc. cit. *Archaster* [sic], sp., original photograph ; DAVENPORT (80) fig. 183. *A. typicus*, habitat, distrib., variations, anus central, measurements ; BEDFORD (25) p. 289.  
 + *Archasterias* ; GREGORY in BATHER (19) p. 250.  
*Archasteridae*, diagnosis, divided into sub-fam. *Pararchasterinae*, *Plutonasterinae*, *Pseudarchasterinae*, *Archasterinae* ; op. cit. p. 251.  
*Archasterinae*, diagnosis ; loc. cit.  
 + *Argaster* ; GREGORY in BATHER (19) p. 250.  
*Arthraster* ; op. cit. p. 255.  
 + *Aspidosoma*, *A. petaloides* accepted as provisional genotype ; op. cit. p. 250.  
 + *Aspidosomatidae*, diagnosis ; loc. cit.  
*Asteracanthion*, vide *Asterias*.

*Asteracanthium distichum* Brandt, from White Sea is *Asterias rubens*; LUDWIG (210) p. 488.

*Asterias* [incl. *Asteracanthion*]; GREGORY in BATHER (19) p. 258: (sub *Asteracanthion*) key to French spp.; ACLOQUE (1) p. 458: key to Arctic spp.; DOEDERLEIN (93) p. 197: key to Belgian spp.; LAMEERE (188) p. 34. *A. sp.*, Bouvet Id.; CHUN (63) p. 492. *A. alboverrucosa* Brandt, is not *Crossaster papposus* but *Solaster endeca*; LUDWIG (210) p. 464. †*A. antiqua*, discussed (vide *Hiseringaster*); STUERTZ (325) p. 216. *A. camtschatica*, incl. *A. acervata*, geogr. and bathymetric distrib., habitat (p. 485), *A. cribraria*, distrib. (p. 482); LUDWIG (210). †*A. dubium*, Wyoming; LOGAN (205) p. 130, pl. xxv. *A. endeca* var. *decemradiata* Brandt = *Crossaster vancouverensis* de Lor.; LUDWIG (210) p. 466. *A. forbesi*, artificial parthenogenesis; LOEB (202): growth and food supply; MEAD (228). *A. glacialis*; ALLEN & TODD (7) p. 187: LUDWIG (210) p. 480: NORDGAARD (245) p. 8: galvanotaxis of larva; CARLGREN (56) p. 475: no galvanotaxis in adult; NAGEL (239) p. 337. *A. groenlandica*, redescr., measurements, probably incl. *A. spitzbergensis* and *A. disticha*, figures of thick- and thin-spined examples; DOEDERLEIN (93) p. 202, pls. iv, v, ix: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 482. *A. hyperborea*, redescr., measurements, one young, perhaps = *A. muelleri* var. *floccosa*; DOEDERLEIN (93) p. 198, pls. iv, v: incl. *A. normani* as young, measurements, now first found at Spitzbergen; LUDWIG (210) p. 484. †*A. impressae*; HUENE (166) p. 351. †*A. jurensis*; loc. cit.: KOBY (177) p. 200. *A. lincki* (incl. *A. stellionura* and *A. gunneri*), redescr., measurements, variations; DOEDERLEIN (93) p. 200, pl. iv: geogr. and bathymetric distrib., habitat, colour in life; LUDWIG (210) p. 486. *A. mülleri*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 481. *A. panopla*; KNIPOVICH (175) p. 452: redescr., measurements; DOEDERLEIN (93) p. 204, pls. iv, v: geogr. and bathymetric distrib., habitat, colour in life; LUDWIG (210) p. 486. *A. polaris*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 485. *A. rubens*; ALLEN & TODD (7) p. 187: LAMEERE (189) p. 21: NORDGAARD (245) p. 8: see II, F, viii; GIARD (127) & (128) p. 763: see II, C, iii; QUINTON (275): copper; DUBOIS (99): host of Copepod; GIESBRECHT (129) p. 201: pseudhaemal and water-vascular systems and axial organ; BATHER (19) p. 25, fig. xxi: described as typical of *Ast.* structure; GREGORY in BATHER (19) p. 241 et sqq., figg. i-iv: young, with regular rows of spines and two regenerating arms; DOEDERLEIN (93) p. 198, pl. ix: incl. *Asteracanthium distichum* Brandt, geogr. and bathymetric distrib.; LUDWIG (210) p. 488. *A. spitzbergensis*; LUDWIG (210) p. 484. *A. stellionura*; KNIPOVICH (175) p. 452: NORDGAARD (246) p. 24. *A. tenuispina*, multiple madreporites; WAITE (345). *A. vulgaris* as typical Echinoderm, habits, development, and structure, popular; DAVENPORT (80) p. 192: regeneration; KING (171).

*Asteriidae*, diagnosis; GREGORY in BATHER (19) p. 258.

*Asterina* [vide etiam *Asteriscus*]; op. cit. p. 254. *A. sp.*; BEDFORD (25) p. 298. *A. gibbosa*, ontogeny; BATHER (19) p. 13, figg. vi, xii: larval organogeny; MACBRIDE (214). *A. regularis*; BENHAM (30).

*Asterinidae*, difficulty of classifying in either *Crypto-* or *Phanero-zonia*, relations to fossil forms; STUERTZ (325) p. 210: diagnosis, divided into sub-famm. *Ganeriinae*, *Asterininae*, and *Palmipedinae*; GREGORY in BATHER (19) p. 254.

*Asterininae*, diagnosis; loc. cit.

*Asteriscus*, key to French spp.; ACLOQUE (1) p. 460.

*Asterodiscus*; GREGORY in BATHER (19) p. 254.

*Asterodon*; op. cit. p. 253.

*Asteropsis*; op. cit. p. 254.

- Astellia* ; GREGORY in BATHER (19) p. 252.  
*Astrogonium* ; op. cit. p. 253 : key to French spp. ; ACLOQUE (1) p. 460.  
*A. abnormale* ; BENHAM (30).  
*Astropecten* ; GREGORY in BATHER (19) p. 252, fig. vii : key to French spp. ; ACLOQUE (1) p. 460 : key to Belgian spp. ; LAMEERE (188) p. 34. *A. irregularis*, geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 453. *A. javanicus*, **n. var.** *malaccanus*, intermediate between *A. javanicus* and *A. andersoni*, Malacca, 2 fms., polian vesicles (p. 291), *A. pleiacanthus*, **n. sp.**, 1-3 fms., Singapore, allied to *A. aurantiacus* (p. 292, pl. xxiv) ; BEDFORD (25).  
*Astropectinidae*, diagnosis, divided into sub-famm. *Astropectininae* and *Luidiinae* ; GREGORY in BATHER (19) p. 252.  
*Astropectininae*, diagnosis ; loc. cit.  
*Bathybiaster* ; loc. cit. *B. sp.*, Bouvet Id. ; CHUN (63) p. 492. *B. pallidus*, geogr. and bathymetric distrib. ; LUDWIG (210) p. 455.  
†*Bdellacoma*, removed from *Palaeocomidae* ; GREGORY in BATHER (19) p. 254.  
*Benthaster* ; op. cit. p. 257.  
*Benthopecten* ; op. cit. p. 251.  
*Blakias*ter, in *Archasteridae* (p. 251), incl. *Leptotychoaster*, and placed in *Astropectininae* (p. 252) ; GREGORY in BATHER (19).  
*Brisinga* ; op. cit. p. 259, fig. v. *B. sp.*, Bouvet Id. (p. 492), Nias Channel (p. 362) ; CHUN (63). *B. coronata* ; LUDWIG (210) p. 488.  
*Brisingaster* ; GREGORY in BATHER (19) p. 259.  
*Brisingidae*, diagnosis, systematic position discussed ; op. cit. p. 258.  
†*Calliaster* ; op. cit. pp. 253, 259.  
*Calliderma* ; op. cit. p. 253. †*C. latum* ; DIBLEY (92) p. 493.  
*Calvasterias* ; GREGORY in BATHER (19) p. 258.  
*Calycaster* ; op. cit. p. 255.  
*Calyptaster* ; op. cit. p. 257.  
*Caulaster* ; op. cit. p. 251.  
*Chaetaster* ; op. cit. p. 255 : key to French spp. ; ACLOQUE (1) p. 459.  
*Chaetasterinae*, diagnosis ; GREGORY in BATHER (19) p. 255.  
*Cheiraster* ; op. cit. p. 251.  
†*Cheiroptaster* ; op. cit. p. 257.  
†*Cheiroptasterinae*, diagnosis ; op. cit. p. 256.  
*Chitonaster* ; GREGORY in BATHER (19) p. 253.  
*Choriaster* ; op. cit. p. 254.  
*Cnemidiaster* ; op. cit. p. 255.  
†*Coelaster* ; GREGORY in BATHER (19) p. 259.  
*Coelasterias* ; op. cit. p. 255.  
*Colpaster* ; op. cit. p. 259.  
†*Compsaster*, discussed ; op. cit. p. 255.  
*Comptonia* ; GREGORY in BATHER (19) p. 253.  
*Coronaster* ; op. cit. p. 258.  
*Coscinasterias* ; op. cit. p. 258.  
*Cosmasterias* ; loc. cit.  
*Craspidaster* ; op. cit. p. 252. *C. glauconotus*, **n. sp.**, 1-3 fms., Malacca ; BEDFORD (25) p. 290, pl. xxiv.  
*Crenaster* Perrier ; GREGORY in BATHER (19) p. 251. †*C. cf. laevis*, marginals only ; OPPENHEIM (251) p. 79, pl. xi. †*C. prisca* ; GREPPIN (138) p. 192.  
*Cribrella sanguinolenta* ; DOEDERLEIN (93) p. 212 : geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 472.  
†*Cribrellites* ; GREGORY in BATHER (19) p. 259.  
*Crossaster* ; op. cit. p. 256 : key to Belgian spp. ; LAMEERE (186) p. 34. *C. papposus*, incl. *C. affinis*, geogr. and bathymetric distrib., habitat, number of arms ; LUDWIG (210) p. 460.

*Cryptaster*; GREGORY in BATHER (19) p. 257.

*Cryptozonia*, Order, diagnosis, extended to Palaeozoic *Ast.*, divided into families, *Palaeocomidae*, *Lepidasteridae*, *Tropidasteridae*, *Linckidae*, *Stichasteridae*, *Solasteridae*, *Korethasteridae*, *Pterasteridae*, *Palasteriscidae*, *Echinasteridae*, *Heliasteridae*, *Pedicellasteridae*, *Asteriidae*, and *Brisingidae*; op. cit. p. 254 et sqq.: see also STUERTZ (325) general paragraph, supra.

*Ctenaster*; GREGORY in BATHER (19) p. 256.

*Ctenodiscinae*, diagnosis, cribriform organs; op. cit. p. 251.

*Ctenodiscus*, loc. cit. *C. crispatus*, N. Atlantic and N. Pacific, including *C. krausei* from Behring Sea, Ludwig having been misled by faulty description of Duncan and Sladen, measurements; DOEDERLEIN (93) p. 221, pl. ix: incl. *C. krausei*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 450.

*Culcita*; GREGORY in BATHER (19) p. 254, fig. vi. *C. sp.*, Diego Garcia; CHUN (63) p. 415. *C. novae guineae*, var. *arenosa*, variation of shape with mode of preserving; BEDFORD (25) p. 296.

+*Cupulaster*; GREGORY in BATHER (19) p. 259.

*Cycethra*; op. cit. p. 254.

*Dermasterias*; loc. cit.

*Dictyaster*; GREGORY in BATHER (19) p. 258.

*Diplasterias*; loc. cit.

*Dipsacaster*; op. cit. p. 252. *D. sladeni*; CHUN (63) p. 491.

*Disasterina*; GREGORY in BATHER (19) p. 254.

*Dytaster*; op. cit. p. 251. *D. agassizi* Perr. nom. nud. 4900 metres, off C. Finisterre; RICHARD (282) p. 76.

*Dorigona*, incl. *Nymphaster*; GREGORY in BATHER (19) p. 253.

*Echinaster*; op. cit. p. 258: key to French spp.; ACLOQUE (1) p. 459.

*E. roseus*, no galvanotaxis in adult; NAGEL (239) p. 337. *E. sanguinolentus*, host of Copepod; GIESBRECHT (129) p. 201. *E. scrobiculatus*, distrib.; LUDWIG (210) p. 476.

+*Echinasterella*; GREGORY in BATHER (19) p. 257.

+*Echinasterias*, n. g., with genotype *E. spinosus*, n. sp., Lower Devon., Bundenbach, referred to *Eustelleridae-Cryptozonia*; STUERTZ (325) p. 230.

*Echinasteridae*, diagnosis, divided into sub-famm. *Acanthasterinae*, *Mithrodiinae*, *Echinasterinae*, and *Valvasterinae*; GREGORY in BATHER (19) p. 257.

*Echinasterinae*, diagnosis; op. cit. p. 258.

+*Echinodiscus*, n. g. (p. 231) [nom. preocc. Agassiz et Worthen], with genotype *E. multidactylus*, n. sp., Lower Devon., Bundenbach, referred to *Eustelleridae-Cryptozonia*; STUERTZ (325) p. 232, pl. iii.

+*Echinostella*, n. g. (p. 233) with genotype *E. traquairi*, n. sp., Lower Devon., Bundenbach, referred to *Palae-Eustelleridae-Cryptozonia-Echinasteridae*; op. cit. p. 234, pls. iii, iv.

*Encrinasteriae*; STUERTZ (325), see general paragraph, supra.

*Euasteroidea*, rejected as systematic conception; GREGORY in BATHER (19) p. 249.

*Eustelleridae*; STUERTZ (325), see general paragraph, supra.

*Ferdina*; GREGORY in BATHER (19) p. 255.

*Flexaster*; op. cit. p. 257.

*Freyella*; op. cit. p. 259. *F. edwardsi* Perr. nom. nud., 4020 metres between Portugal and Azores; RICHARD (282) p. 76.

*Fromia*; GREGORY in BATHER (19) p. 255.

*Ganeria*; op. cit. p. 254.

*Ganeriinae*, diagnosis; loc. cit.

*Gastraster*; GREGORY in BATHER (19) p. 258.

*Gnathaster*, vide *Odontaster*. *G. (?)*, sp. nondescr., Agulhas bank, figd. (p. 491), *G.*, sp., Bouvet Id. (p. 492); CHUN (63).



- Goniaster*; GREGORY in BATHER (19) p. 253. †*G. mammillatus*; CLARK (66) p. 339. †*G. quingueloba*; DEECKE (82) p. 71.
- Goniodiscinae*, diagnosis; GREGORY in BATHER (19) p. 253.
- Goniodiscus*; loc. cit. *G. articulatus*, incl. *Pentaceros granulosus* Gray; BEDFORD (25) p. 294.
- Goniodon*; GREGORY in BATHER (19) p. 253.
- Goniopecten*; op. cit. p. 251.
- Gymnasteria*; op. cit. p. 254.
- Gymnasteriidae*, diagnosis; loc. cit.
- Gymnobrisinga*; GREGORY in BATHER (19) p. 259.
- †*Helianthaster*, redescrib. and referred to *Heliasteridae*; op. cit. p. 258.
- †*Helianthasterinae*, diagnosis; loc. cit.
- Heliaster*; loc. cit. *H. cumingi*, multiplication of rays compared with *Pycnopodia*; RITTER & CROCKER (283) p. 249.
- Heliasteridae*, diagnosis, divided into sub-fam. *Helianthasterinae*, *Heliasterinae*; GREGORY in BATHER (19) p. 258.
- Heliasterinae*, diagnosis; loc. cit.
- Henricia*, incl. *Cribrella*; loc. cit. *H. oculata*, syn. of *Cribrella sanguinolenta*, q.v.; LUDWIG (210).
- Hexaster*, not valid; DOEDERLEIN (93) p. 217. *H. obscurus*; RICHARD (282) p. 76, figg. 24, 25: is *Pteraster*; DOEDERLEIN (93) p. 217: incl. *P. hexactis*, distrib.; LUDWIG (210) p. 468.
- Hippasterias*; GREGORY in BATHER (19) p. 253, fig. ix. *H. phrygiانا*; DOEDERLEIN (93) p. 218: HARTLAUB (153) p. 191: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 457.
- †*Hisingeraster*, n. g. with genotype *Asterias antiqua* [preocc. *Lindstromaster*] referred to *Phanerozonia*; STUERTZ (325) pp. 216, 225.
- Hoplaster*; GREGORY in BATHER (19) p. 253.
- †*Hudsonaster*, n. g. with genotype *Palasterina rugosa*; STUERTZ (325) p. 225.
- Hydrasterias*; GREGORY in BATHER (19) p. 258.
- Hymenaster*; op. cit. p. 257, fig. xii. *H. giboryi* Perr. nom. nud., 4261 metres, near Azores; RICHARD (282) p. 77. *H. pellucidus*; DOEDERLEIN (93) p. 218: KNIPOVICH (175) p. 458: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 472.
- Hymenodiscus*; GREGORY in BATHER (19) p. 259.
- Hyphalaster*; op. cit. p. 251. *H. valdiviae* n. sp., 4990 metres, Gulf of Guinea, distinguished from *H. parvifiti* and figd.; LUDWIG in CHUN (63) p. 490.
- Iconaster*; GREGORY in BATHER (19) p. 253. *I. longimanus*, Malacca; BEDFORD (25) p. 293.
- Ilyaster mirabilis*, distrib.; LUDWIG (210) p. 456.
- Isaster*; GREGORY in BATHER (19) p. 251.
- †*Jaekelaster* n. g., with genotype *J. petaliformis* n. sp., Lower Devon., Bundenbach, referred to *Eustelleridae-Cryptozonia*; STUERTZ (325) p. 235, pl. iv.
- Korethraster*; GREGORY in BATHER (19) p. 256. *K. hispidus*, distrib.; LUDWIG (210) p. 468.
- Korethrasteridae*, diagnosis; GREGORY in BATHER (19) p. 256.
- Labidiaster*; op. cit. p. 259. *L. radiousus*, multiplication of rays compared with *Pycnopodia*; RITTER & CROCKER (283) p. 248.
- Lasiaster*; GREGORY in BATHER (19) p. 254. *L. hispidus*, possibly incl. *L. villosus* Sladen, geogr. and bathymetric distrib.; LUDWIG (210) p. 460.
- Lebrunaster*; GREGORY in BATHER (19) p. 254.
- Leiaster*; op. cit. p. 255.
- †*Lepidaster*; loc. cit. & fig. x.
- †*Lepidasteridae*, diagnosis; loc. cit.

- Leptaster*; GREGORY in BATHER (19) p. 253.  
*Leptasterias*; op. cit. p. 258.  
*Leptogonaster*, referred to *Goniodiscinae*; op. cit. p. 253.  
*Leptoptychaster arcticus*; DOEDERDEIN (93) p. 224: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 452.  
*Linckia*; GREGORY in BATHER (19) p. 255. *L. sp.* regeneration; HORST (161) & HUBRECHT (165). *L. diplax* and *L. miliaris*; ANDREWS (13) p. 116.  
*Linckiidae*, diagnosis, divided into sub-famm. *Roemerasterinae*, *Linckiinae*, *Chaetasterinae*, *Metrodirinae*; GREGORY in BATHER (19) p. 255.  
*Linckiinae*, diagnosis; loc. cit.  
*Lonchotaster*; GREGORY in BATHER (19) p. 251.  
*Lophaster*; GREGORY in BATHER (19) p. 256. *L. furcifer*; KNIPOVICH (175) p. 458: geogr. and bathymetric distrib., habitat, large specimen (R=125 mm.) from Spitzbergen, colour in life; LUDWIG (210) p. 467.  
†*Loriolaster*; GREGORY in BATHER (19) p. 257.  
*Luidia*; op. cit. p. 252. *L. sp.* (*Bipinnaria asterigera*); BROWNE (49) p. 685. *L. sp.* Bouvet Id.; CHUN (63) p. 492. *L. clathrata*?; DUERDEN (100) p. 613. *L. longispina* (p. 292), *L. maculata*, (p. 293), *L. penangensis*, food, differences from type (p. 292); BEDFORD (25).  
*Luidiaster*; GREGORY in BATHER (19) p. 251.  
*Luidiinae*, diagnosis; op. cit. p. 252.  
*Lytaster*; op. cit. p. 258.  
*Mammaster*; op. cit. p. 255.  
*Marginaster*; GREGORY in BATHER (19) p. 254.  
*Marsipaster*; op. cit. 257.  
*Mayraster*; loc. cit.  
*Mediaster*; op. cit. p. 253. *M. stellatus*; RICHARD (282) p. 76, fig. 26.  
†*Medusaster*; GREGORY in BATHER (19) p. 259.  
*Metopaster*; op. cit. p. 253. *M. mantelli* and *M. parkinsoni*; DIBLEY (92) p. 493.  
*Metrodora*; GREGORY in BATHER (19) p. 255.  
*Metrodirinae*; loc. cit.  
*Mimaster*; GREGORY in BATHER (19) p. 253.  
*Mimasterinae*, diagnosis; loc. cit.  
*Mitelephaster*; loc. cit.  
*Mithrodia*; GREGORY in BATHER (19) p. 258.  
*Mithrodiinae*, diagnosis; loc. cit.  
*Mitraster*; op. cit. p. 253. *M. hunteri* and *M. rugatus*?; DIBLEY (92) p. 493.  
†*Monaster*; GREGORY in BATHER (19) p. 250.  
*Moriaster*; op. cit. p. 252.  
*Myxaster*; op. cit. p. 257.  
*Narcissia*; op. cit. p. 255.  
*Nardoa*; loc. cit. *N. tuberculata*; ANDREWS (13) p. 116.  
*Nectria*; GREGORY in BATHER (19) p. 253.  
*Neomorphaster*; op. cit. p. 255.  
*Nepanthia*; op. cit. p. 254.  
*Nidorellia*; loc. cit.  
*Nymphaster*, vide *Dorigona*. *N. alcocki*, n. sp., 1469 metres, G. of Aden, figured but not described; LUDWIG in CHUN (63) p. 493. *N. coombii*?; DIBLEY (92) p. 493.  
*Odinia*; GREGORY in BATHER (19) p. 259.  
*Odontaster*; incl. *Gnathaster*; op. cit. p. 253.  
*Ogmaster*; loc. cit.  
*Ophidiaster*; op. cit. p. 255: key to French spp.; ACLOQUE (1) p. 459.  
*O. ludwigi*, n. sp., from Peru, allied to *O. agassizi*, coll. de Loriol; LORIOLE (207) p. 78, pl. viii.

*Oreaster*, vide *Pentaceros*.

†*Palaeaster*; GREGORY in BATHER (19) p. 250.

†*Palaeasteridae*, diagnosis, divided into sub-famm. *Palaeasterinae* and *Xenasterinae*; loc. cit.

†*Palaeasterina* [vide etiam *Palasterina*]; loc. cit.

†*Palaeasterinae*, sub-fam. of *Palaeasteridae*, diagnosis (does not include *Palaeasterina*); loc. cit.

†*Palaeasterinidae*, diagnosis; loc. cit.

†*Palaeasteroidea*, rejected as systematic conception; op. cit. p. 249.

†*Palaeocoma*; GREGORY in BATHER (19) p. 254.

†*Palaeocomidae*, diagnosis; loc. cit.

†*Palaeonectria*; op. cit. p. 250.

†*Palaeostella*; loc. cit.

†*Palaeosolaster* n. g. (p. 226), with genotype, *P. gregoryi*, n. sp., Lower Devon., Bundenbach, referred to *Encrinasteriae-Cryptozonia*; STUART (325) p. 227, pl. ii.

†*Palasterina* discussed and diagnosed (pp. 213, 214); *P. follmanni*, discussed (p. 218) [vide etiam *Pseudopalasterina*]; *P. obtusa*, probably *Urasterella* (p. 216); *P. primaeva*, perhaps belongs to *Cryptozonia* (p. 224); *P. rugosa*, discussed (p. 218); *P. stellata*, discussed (p. 217): STUART (325).

†*Palasteriscidae*, diagnosis, position of madreporite discussed; GREGORY in BATHER (19) p. 257.

†*Palasteriscus*; loc. cit.

*Palmipedinae*, diagnosis; op. cit. p. 254.

*Palmipes*; loc. cit.: key to French spp.; ACLOQUE (1) p. 459: key to Belgian spp.; LAMEERE (188) p. 34. *P. rosaceus*; BEDFORD (25) p. 297.

*Paragonaster*; GREGORY in BATHER (19) p. 253. *P. subtilis* Perr. nom. nud., 4020 metres, betw. Portugal and Azores; RICHARD (282) p. 76.

*Pararchaster*; GREGORY in BATHER (19) p. 251.

*Pararchasterinae*, diagnosis; loc. cit.

*Patiria*; op. cit. p. 254. *P. sp.*; BEDFORD (25) p. 298.

*Paulia*; GREGORY in BATHER (19) p. 254.

*Pectinaster*; op. cit. p. 251.

*Pectinidiscus* n. g. of *Porcellanasteridae*, with genotype *P. annae*, n. sp., 463 metres, Zanzibar, figd. but not descr.; LUDWIG in CHUN (63) p. 494.

*Pedicellaster*; GREGORY in BATHER (19) p. 258. *P. typicus*, incl. *P. palaeocrystallus* Dunc. & Slad., geogr. and bathymetric distrib., habitat, now first found at Spitzbergen; LUDWIG (210) p. 476.

*Pedicellasteridae*, diagnosis; GREGORY in BATHER (19) p. 258.

*Pentaceropsis*; op. cit. p. 254.

*Pentaceros*, incl. *Oreaster*; loc. cit. *P. granulosus*, vide *Goniodiscus articulatus*. *O. [i. e. P.] obtusus*; DIBLEY (92) p. 493. *P. reticulatus*; CONANT (71): DUERDEN (100) p. 613 and (101) p. 620. *P. turritus*, specific characters and their variation, measurements; BEDFORD (25) p. 295.

*Pentacerotidae*, diagnosis; GREGORY in BATHER (19) p. 253.

*Pentagonaster*; loc. cit. *P. abyssalis*, n. sp., 2253 metres, Maldives, figured but not described (p. 493). *P. excellens*, n. sp., 628 metres, Somali coast, figd. but not descr. (p. 494); LUDWIG in CHUN (63). *P. granularis*; KNIPOVICH (175) p. 458: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 456. *P. megaloplax*; DIBLEY (92) p. 493.

*Pentagonasteridae*, diagnosis, divided into sub-famm. *Pentagonasterinae*, *Goniodiscinae*, *Mimasterinae*; GREGORY in BATHER (19) p. 253.

*Pentagonasterinae*; diagnosis; loc. cit.

- Peribolaster* ; GREGORY in BATHER (19) p. 256.  
*Perknaster* ; op. cit. p. 258.  
*Persephonaster* ; op. cit. p. 251.  
† *Petraster* ; op. cit. p. 250.  
*Phaneraster* ; op. cit. p. 253.  
*Phanerozonia*, Order, diagnosis, extension to Palaeozoic *Ast.*, divided into Families, *Palaeasteridae*, *Palaeasterinidae*, *Aspidosomatidae*, *Taeniasasteridae*, *Archasteridae*, *Porcellanasteridae*, *Astropectinidae*, *Pentagonasteridae*, *Antheneidae*, *Pentacerotidae*, *Gymnasteriidae*, *Asterinidae* ; GREGORY in BATHER (19) p. 249 et sqq.  
*Pharia* ; op. cit. p. 255.  
*Phataria* ; loc. cit. *P. unifascialis* from Celebes ; LORIOLE (207) p. 80.  
*Pholidaster* ; GREGORY in BATHER (19) p. 255.  
*Phoxaster* ; op. cit. p. 252.  
*Platasterias* ; loc. cit.  
*Plectaster* ; GREGORY in BATHER (19) p. 258.  
† *Plumaster* ; op. cit. p. 259.  
*Plutonaster* ; op. cit. p. 251. *P. bifrons* probably not Arctic (p. 450), *P. parelii*, incl. *Pseudarchaster tessellatus* var. *arcticus* Sluiter, geogr. and bathymetric distrib., habitat (p. 449) ; LUDWIG (210).  
*Plutonasterinae*, diagnosis ; GREGORY in BATHER (19) p. 251.  
*Podasterias* ; op. cit. p. 258.  
*Polyasterias* ; loc. cit.  
*Pontaster* ; op. cit. p. 251. *P. sp.* Bouvet Id. ; CHUN (63) p. 492. *P. hispidus*, 200 in haul, near Colombo ; ANDERSON (11) p. 8. *P. tenuispinus* ; DOEDERLEIN (93) p. 223 : HARTLAUB (153) p. 191 : incl. *P. limbatus*, *P. hebitus*, and *P. marionis*, geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 447.  
*Porania* ; GREGORY in BATHER (19) p. 254. *P. sp.* Bouvet Id. ; CHUN (63) p. 492.  
*Poraniomorpha* ; GREGORY in BATHER (19) p. 254. *P. rosea*, geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 459.  
*Porcellanaster* ; GREGORY in BATHER (19) p. 251, fig. viii.  
*Porcellanasteridae*, diagnosis, divided into sub-famm. *Porcellanasterinae* *Ctenodiscinae* ; loc. cit.  
*Porcellanasterinae*, diagnosis ; loc. cit.  
*Prognaster* ; op. cit. p. 255. *P. grimaldii* ; RICHARD (282) p. 75, fig. 23.  
† *Protasteracanthion* ; GREGORY in BATHER (19) p. 251.  
*Pseudarchaster* ; loc. cit. *P. tessellatus* var. *arcticus* Sluiter, probably = *Plutonaster parelii* var. *longobrachialis* Dan. & Kor. ; LUDWIG (210) p. 449.  
*Pseudarchasterinae*, diagnosis ; GREGORY in BATHER (19) p. 251.  
*Pseudaster* ; loc. cit.  
† *Pseudopalasterina*, n. g. with genotype *Palasterina follmanni* Stuert, which is redescrib. ; STUERTZ (325) pp. 219, 225.  
*Psilaster* ; GREGORY in BATHER (19) p. 252. *P. andromeda*, incl. *P. florum* Verrill, geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 454.  
*Pteraster hexactis*, vide *P. et Hexaster obscurus*. *P. militaris* ; DOEDERLEIN (93) p. 218 : possibly incl. *P. aporus* Ludw., geogr. and bathymetric distrib., habitat, arm forked ; LUDWIG (210) p. 469. *P. obscurus*, incl. *P. hexactis*, rediagnosed ; measurements compared with *P. pulvillus*, young in brood-chamber, how nourished, adult covered with slime, does not form an independent genus ; DOEDERLEIN (93) p. 213, pl. viii. *P. pulvillus*, restricted by removal of *P. obscurus* ; op. cit. p. 217, pl. viii : geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 470.  
*Pterasteridae*, diagnosis, divided into sub-famm. *Cheiroptasterinae*, *Pterasterinae*, *Pythonasterinae* ; GREGORY in BATHER (19) p. 256.



*Pterasterinae*, diagnosis ; GREGORY in BATHER (19) p. 257.

*Pycnaster* ; op. cit. p. 253.

*Pycnopodia* ; op. cit. p. 258. *P. helianthoides*, origin and relations of accessory rays ; RITTER & CROCKER (283).

*Pythonaster* ; GREGORY in BATHER (19) p. 257.

*Pythonasterinae*, diagnosis ; loc. cit.

*Radiaster* ; op. cit. p. 254.

*Remaster* ; GREGORY in BATHER (19) 256.

*Retaster* ; op. cit. p. 257. *R. cribrus*, colour, osculum ; BEDFORD (25) p. 298. *R. multipes*, geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 471.

*Rhegaster* ; GREGORY in BATHER (19) p. 254. *R. tumidus* ; KNIPOVICH (175) p. 458: measurements, skeleton of large individual descr., differences from young stages ; DOEDERLEIN (93) p. 219, pl. ix: geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 459.

*Rhipidaster* ; GREGORY in BATHER (19) p. 256.

†*Rhopalocoma* ; op. cit. p. 257.

†*Roemeraster* ; op. cit. p. 255.

†*Roemerasterinae*, diagnosis ; loc. cit.

*Rosaster* ; GREGORY in BATHER (19) p. 253.

†*Salteraster* ; op. cit. p. 251.

†*Schoenaster* ; op. cit. p. 250.

*Sclerasterias* ; op. cit. p. 258.

*Smilasterias* ; loc. cit.

*Solaster* ; op. cit. p. 256, fig. xi: key to French spp. ; ACLOQUE (1) p. 459.

*S. sp.* ; SĪNĪTZIN (308). *S. sp.* Bouvet Id., figd. ; CHUN (63) p. 492.

*S. affinis* is only var. of *S. papposus* ; DOEDERLEIN (93) p. 209. *S.*

*endeca*, measurements, variations ; loc. cit. and pl. vii: incl. *Asterias*

*alboverrucosa* Brandt, *S. syrtensis* Verrill, and probably *S. intermedius*

Sluiter, geogr. and bathymetric distrib., habitat ; LUDWIG (210) p. 464.

*S. furcifer* ; DOEDERLEIN (93) p. 212. *S. glacialis*, distrib. ; LUDWIG

(210) p. 467. *S. papposus*, endoskeleton ; STEWART (318) p. 13:

measurements, extensive variations, partly local (p. 205, pl. vi) ; **var.**

**nov. anglica**, English coasts (p. 207, pl. vi) ; **var. nov. squamata**,

N. Atlantic (p. 208, pl. vi) ; *S. syrtensis*, new to European waters,

differences fr. *S. endeca* (p. 210, pl. vii) : DOEDERLEIN (93).

*Solasteridae*, diagnosis ; GREGORY in BATHER (19) p. 255.

†*Sphaeraster* Quenst., referred to *Pentacerotidae* ; op. cit. p. 254.

†*Sphaerites* Quenst., referred to *Pentacerotidae* ; loc. cit.

*Sporasterias* ; GREGORY in BATHER (19) 258.

*Stegmaster* ; op. cit. p. 254.

*Stellaster* ; op. cit. p. 253. †*S. coombi* ; DEECKE (82) p. 42. *S. incei*,

measurements of 12 specimens, black pigment on ventro-lateral

plates, parasitic *Thyca* ; BEDFORD (25) p. 294.

†*Stenaster* ; restr. to *S. salteri*, and excl. *S. pulchellus* ; GREGORY in BATHER (19) p. 251.

*Stephanaster* ; op. cit. p. 253.

*Steraster* ; GREGORY in BATHER (19) p. 257.

*Stichaster* ; op. cit. p. 255. *S. albulus*, geogr. and bathymetric distrib.,

habitat, 6-, 3-, and 5-armed specimens (p. 479) ; *S. arcticus*, distrib.

(p. 478) ; *S. roseus*, geogr. and bathymetric distrib., habitat (p. 477) :

LUDWIG (210).

*Stichasteridae*, diagnosis, divided into subfam. *Stichasterinae* and *Zoroasterinae* ; GREGORY in BATHER (19) p. 255.

*Stichasterinae*, diagnosis ; loc. cit.

*Styracaster* ; op. cit. p. 251. *S. sp.*, 5248 metres, near Cocos Is., text-fig.

(p. 288), *S. sp.* nondescr. 2492 metres, Gulf of Guinea, figd. (p. 491) ;

CHUN (63). *S. armatus* Perr. nom-nud., 4900 metres off C. Finisterre ;

- S. edwardsi* Perr. nom-nud., 4020 metres betw. Portugal and Azores ;  
*S. horridus* Slad., ibid : RICHARD (282) p. 76.  
 †*Taeniaster* ; GREGORY in BATHER (19) p. 251.  
 †*Taeniasteridae*, diagnosis ; op. cit. p. 250.  
*Tarsaster* ; op. cit. p. 255.  
*Temnaster hexactis* is syn. of *Pteraster obscurus*, and the genus not distinguishable ; DOEDERLEIN (93) p. 216.  
*Tethyaster* ; GREGORY in BATHER (19) p. 251.  
 †*Tetraster* ; op. cit. p. 250.  
*Thoracaster* ; op. cit. p. 251.  
*Tonia* ; op. cit. p. 255.  
*Tremaster* ; op. cit. p. 254.  
 †*Trentonaster* n. g. with genotype *Palasterina stellata* [preocc. *Schuchertia*] referred to *Phanerozonia* ; STUERTZ (325) p. 225.  
 †*Trichasteropsis* ; GREGORY in BATHER (19) p. 250.  
 †*Trichotaster* ; op. cit. p. 259.  
 †*Tropidaster*, abactinal "keel" due to exposure of ambulacra ; op. cit. p. 255.  
 †*Tropidasteridae*, diagnosis ; loc. cit.  
*Tylaster* ; op. cit. p. 254. *T. willei*, distrib. ; LUDWIG (210) p. 459.  
*Uniophora* ; GREGORY in BATHER (19) p. 258.  
 †*Urasterella* ; op. cit. p. 251.  
*Valvaster* ; op. cit. p. 258.  
*Valvasterinae*, diagnosis ; loc. cit.  
 †*Xenaster* ; GREGORY in BATHER (19) p. 250.  
 †*Xenasterinae*, sub-fam. of *Palaeasteridae*, diagnosis ; loc. cit.  
*Zoroaster* ; op. cit. p. 255. *Z. fulgens*, figd. ; CHUN (63) p. 489.  
*Zoroasterinae*, diagnosis ; GREGORY in BATHER (19) p. 255.

## (E.)—OPHIUROIDEA.

*Ophiuroidea* as Sub-class of *Stelleroidea* (vide IV, A), diagnosis, and division into Orders, *Lysophiuræ*, *Streptophiuræ*, *Cladophiuræ*, *Zygophiuræ* ; GREGORY in BATHER (19) pp. 273–278. Classification of *Oph.*, discussion of Bell's classification, 1892, and Gregory's, 1896 [i.e. 1897], reply to criticisms of Gregory and correction of misstatements, with divisions of Palaeozoic *Oph.* ; STUERTZ (325) p. 177 et sqq. Diagnosis, name, and systematic position of *Ophiuroidea* ; HAMANN (148) pp. 746, 748.

- †*Aeroura* ; GREGORY in BATHER (19) p. 278.  
 †*Aganaster*, incl. *Ophiopege* ; op. cit. p. 275.  
*Aganasteridae*, as sub-fam. of *Protophiuræ*, defined ; STUERTZ (325) p. 203.  
*Allostichia* Haeckel, discussed ; op. cit. p. 194.  
*Amphiglypha* ; GREGORY in BATHER (19) p. 278.  
*Amphilepis* ; loc. cit.  
*Amphilimna* maintained (p. 316), diagnosis, incl. *A. caribea* (p. 319) which is perhaps young of *A. olivacea* (p. 318, pl. xlii) ; VERRILL (341).  
*Amphiocnida* [not n. s.-g. as stated, but Verrill 1899], s.-g. of *Amphiura*, diagnosis (pp. 307, 311, 316, 318), *A. albobiridis*, *A. brachiata*, *A. pilosa*, *A. putnami*, genotype (p. 318) ; VERRILL (341).  
*Amphiodia*, diagnosis (p. 306), key to W. Atlantic spp. (p. 313), *A. atra*, *A. antarctica*, *A. andreae*, *A. barbarae*, *A. chilensis*, *A. fissa*, *A. gibbosa*, *A. grisea*, *A. impressa*, *A. integra*, *A. laevis*, *A. lutkeni* (also as *Ophiocnida*, q.v.), *A. occidentalis*, *A. ochroleuca*, *A. olivacea*, *A. orstedii*, *A. planispina*, *A. pulchella*, *A. repens*, *A. riisei*, and *A. urtica* (p. 313) ; VERRILL (341).

*Amphioplus*, diagnosis (p. 306), introduced as n. g. [but is Verrill 1899] with key to W. Indian spp. (p. 314); *A. abdita* (p. 314); *A. agassizii*, n. sp., 116 fms., W. Indies, based on "*Amphiura* sp." Lyman (Bull. Mus. Harvard x, p. 253, pl. v, figg. 64-66, 1883) redescr. (pp. 314, 315); *A. canescens*, *A. cernua* (p. 315); *A. cuneata* (p. 314); *A. dalea* (p. 315); *A. duplicata* (p. 314); *A. glauca*, *A. laevis* (p. 315); *A. macilenta*, *A. nereis* (p. 314); *A. patula* (p. 315); *A. stearnsi*, *A. tumida*, *A. verrilli* (p. 314): VERRILL (341).

*Amphipholis*; GREGORY in BATHER (19) p. 278: restricted and diagnosed with genotype "*A. squamata* (or *A. elegans*)" (p. 306), ditto with genotype *A. januarii* (p. 311), key to W. Atlantic spp. (p. 312); VERRILL (341): restr. with genotype *A. squamata* (= *A. elegans*); VERRILL (342) p. 587. *A. abnormis*, *A. coreae*, *A. depressa*, *A. elegans*, *A. geminata*; VERRILL (341) p. 312. *A. goësi*; loc. cit. and VERRILL (342) p. 587. *A. gracillima*, *A. hastata*, *A. impressa*, *A. kochi*, *A. limbata*, *A. microdiscus*, *A. patagonica*, *A. pugetana*, *A. puntarenæ*, *A. squamata*, *A. subtilis*; VERRILL (341) p. 312. *A. tenera*; loc. cit. and VERRILL (342) p. 587. *A. tenuispina*, *A. torelli*, *A. violacea*; VERRILL (341) p. 312.

*Amphipsila*, diagnosis, with genotype *A. maculata*; VERRILL (341) pp. 333, 348, pl. xliii.

*Amphiura*; GREGORY in BATHER (19) p. 278: discussed, restricted, and diagnosed, with genotype *A. chiajei*, also divided into sub-genera, and key to W. Atlantic spp. given; VERRILL (341) pp. 305-311: key to French spp.; ACLOQUE (1) p. 456. *A. angularis* (p. 376), *A. atlantica* (p. 311); VERRILL (341). *A. belgicae*, n. sp., 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819. *A. canadensis*, n. sp., G. of St. Lawrence (p. 311), *A. complanata* (p. 309), *A. crassipes* (p. 309), *A. denticulata* (p. 310); VERRILL (341). *A. elegans*; ALLEN & TODD (7) p. 188. *A. eugenieae* (p. 309), *A. exigua*, n. sp., G. of St. Lawrence (p. 311), *A. (Hemilepis) flexuosa* (p. 309), *A. fragilis* (p. 311), *A. grandisquama* (p. 310), *A. incisa* (p. 309), *A. lunaris* (p. 310), *A. otteri*, protective colour (pp. 308, 309), *A. palmeri* (p. 309); VERRILL (341). *A. patula*; CHUN (63) p. 226. *A. polita*, n. sp., 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819. *A. relicta*; KOEHLER (179) pl. xvi. *A. (Hemilepis) semiermis*; VERRILL (341) p. 309. *A. squamata*, original photograph, habits; DAVENPORT (80) fig. 184: host of Copepod; GIESBRECHT (129) p. 201. *A. stimpsoni*; VERRILL (341) p. 310. *A. sundevalli*; loc. cit.: habitat, distrib., large individuals, differences from younger; GRIEG (139) p. 265. *A. tomentosa*; VERRILL (341) p. 376.

*Amphiuridae*, diagnosis; GREGORY in BATHER (19) p. 278.

†*Aspidura*; loc. cit.

*Astero*—, vide *Astro*—.

*Astrochele*; GREGORY in BATHER (19) p. 276.

*Astrochelidae*, diagnosis; VERRILL (341) p. 369.

*Astrocladus*, n. g., with genotype *Euryale verrucosum* Lam.; loc. cit.

*Astrodon*; GREGORY in BATHER (19) p. 276.

†*Astrocnida*; loc. cit.

*Astrocreas*; loc. cit.

*Astrodia*, diagnosis; VERRILL (341) p. 371.

*Astrogeron*, n. g., genotype *Ophiogeron supinus* Lym.; op. cit. p. 358.

*Astrogomphus*; GREGORY in BATHER (19) p. 276.

*Astronycidae*, diagnosis; loc. cit.: ditto; VERRILL (341) p. 370.

*Astronyx*; GREGORY in BATHER (19) p. 276: key to French spp.; ACLOQUE (1) p. 457. *A. sp. nondescr.*; CHUN (63) p. 170. *A. lymani*, descr.; VERRILL (341) p. 371, pl. xlii.

*Astrophiuura*, supposed intermediate between *Ast.* and *Oph.*; GREGORY in

- BATHER (19) p. 238 [but the facts adduced are the reverse of the actual case]: [*Astrophysura*?] "Neues Ophiuridengenus" 500 metres, Agulhas bank, figured; CHUN (63) p. 488.
- Astrophyton*; GREGORY in BATHER (19) pp. 260, 276, fig. xxxii: history of name; VERRILL (341) p. 368: key to French spp.; ACLOQUE (1) p. 458. *A. sp.*, large individual, Spitzbergen; SCHAUDINN (296) p. 236. *A. laevipelle* syn. of *Euryale aspera* s. str.; LORIOLO (207) p. 92. *A. muricatum*; DUERDEN (101) p. 620.
- Astroporpa*; GREGORY in BATHER (19) p. 276.
- Astroschema*; loc. cit. and figg. xxviii, xxix.
- Astroschem[at]idae*, diagnosis; VERRILL (341) p. 370.
- Astrotoma*; GREGORY in BATHER (19) p. 276.
- †*Bundenbachia*; op. cit. p. 274: arm-ossicles not divided into ambulacral and adambulacral portions, belongs to *Palaeophiuridae* Greg.; STUART (325) p. 187. *B. grandis*, vide *Palaeophiomyxa*.
- †*Cholaster*; GREGORY in BATHER (19) p. 275.
- Cladophiurae*, diagnosis, divided into Families *Astronycidae*, *Trichasteridae*, and *Gorgonocephalidae*; op. cit. p. 276: discussed as classificatory division; STUART (325) p. 178.
- Colophiurae* Haeck., discussed; op. cit. p. 193.
- Ctenomphiura*, n. g. of *Amphiuridae* with genotype *C. maxima* (Lym.); VERRILL (341) p. 306.
- †*Eoluidia*; GREGORY in BATHER (19) p. 275.
- †*Eoluididae*, diagnosis; loc. cit.: STUART (325) pp. 197, 203.
- †*Eophiuridae* [err. pro *Eophiuritidae*, melius autem *Eoluididae*], as subfam. of *Protophiureae*, defined, incl. *Eophiurites* [*Eoluidia*], *Eospondylus*, *Miospondylus*; STUART (325) p. 203.
- †*Eophiurites* **nom. nov.** pro *Eoluidia* Stuart, because *Oph.* and not *Ast.* [insufficient reason]; op. cit. p. 190.
- †*Eospondylus*; GREGORY in BATHER (19) p. 275.
- †*Epipiellum symmetricum* Lomnicki, = *Oph.* arm-ossicles; ANDRUSOV (15).
- †*Eucladia*, systematic position; STUART (325) p. 183: ditto, and *E. johnsoni*, discussed; GREGORY in BATHER (19) p. 275.
- †*Eucladiidae*, diagnosis; loc. cit.: defined, as either "Primitiv-Streptospondyli" or *Palae-Euryalidae*; STUART (325) pp. 198, 204.
- †*Eugaster*; GREGORY in BATHER (19) p. 274. *E. logani* referred to *Ophiocercinasteridae*; STUART (325) p. 200.
- Euryale*; GREGORY in BATHER (19) p. 276. *E. aspera* discussed and restricted (p. 91), specimens so named by Müller & Troschel, Lyman, and Studer being referred to *E. studeri*, n. sp., Singapore, characters of young (p. 86, pl. viii); LORIOLO (207). *E. verrucosum*, vide sup. *Astrocladus*.
- Euryalidae* restr., diagnosis; VERRILL (341) p. 366.
- Euryalinae*, n. sub-fam. of *Euryalidae*, for *Euryale*; op. cit. p. 367.
- †*Furcaster*; GREGORY in BATHER (19) p. 275, fig. xxxi: no ventral arm-plates; STUART (325) p. 191.
- Furcasteridae*, as sub-fam. of *Protophiureae*, defined; op. cit. p. 203.
- †*Geocoma* d'Orb.; GREGORY in BATHER (19) p. 278.
- Gorgonocephalidae*; op. cit. p. 276: diagnosis; VERRILL (341) p. 367.
- Gorgonocephalus*; GREGORY in BATHER (19) p. 276: history of name; VERRILL (341) p. 368. *G. agassizi*, measurements, comparison with other N. European spp.; DOEDERLEIN (93) p. 227, pl. x: distrib., young individual figured, habitat; GRIEG (139) p. 271. *G. eucnemis*; HARTLAUB (153) pp. 177, 187, 190: incl. *G. malmgreni*, measurements and variation; DOEDERLEIN (93) p. 226, pl. x: distrib., young individuals descr. and figd., habitat; GRIEG (139) p. 268. *G. lamarcki* (p. 278), and *G. lincki* (p. 277), not Arctic; GRIEG (139). *G. malmgreni*, vide *G. eucnemis*.



*Gymnolophus* referred to *Ophiiothrichidae*; VERRILL (341) p. 304.

*Helianthasteridae*, defined, as either "Primitiv-Streptospondyline" or *Palae-Euryalidae*; STUERTZ (325) p. 204.

*Hemieuryale*; GREGORY in BATHER (19) p. 276. *H. pustulata*, perhaps incl. *Ophiura cuspidifera* Lam., redescri.; VERRILL (341) p. 363.

*Hemieuryalidae*, diagnosis; loc. cit.

*Hemiglypha*; GREGORY in BATHER (19) p. 278.

*Hemilepis*, s.-g. of *Amphiura* [not n. s.-g. as queried in Zool. Rec. 1899, but now ascribed to Ljungman 1871]; VERRILL (341) pp. 307, 309.

*Hemiphotis*; GREGORY in BATHER (19) p. 278, fig. xxxiii.

+*Lapworthura*; op. cit. p. 275.

+*Lapworthuridae*, diagnosis; loc. cit.: as sub-fam. of *Protophiureae*, defined; STUERTZ (325) pp. 197, 203.

*Lutkenia* referred to *Ophiiothrichidae*; VERRILL (341) p. 304.

+*Lysophiuræ*, Order, diagnosis, divided into Families *Protasteridae* and *Palaeophiuridae*; GREGORY in BATHER (19) p. 274: rejected in favour of *Ophio-Encrinasteriæ*; STUERTZ (325) pp. 184, 195.

+*Miospondylus*; GREGORY in BATHER (19) p. 275.

*Neoplax*; op. cit. p. 276.

+*Onychaster*, discussed; op. cit. p. 275: systematic position; STUERTZ (325) p. 180.

+*Onychasteridae*, diagnosis; GREGORY in BATHER (19) p. 275: as sub-fam. of *Protophiureae*, defined; STUERTZ (325) pp. 198, 202.

*Ophiacantha*; GREGORY in BATHER (19) p. 278: habitat, habits, protective adaptation, age-differences (p. 321), key to W. Atlantic spp. (p. 323), restricted and diagnosed (p. 330); *O. abyssicola* (pp. 324, 335); *O. aculeata* (pp. 323, 335); *O. anomala*, viviparous (pp. 324, 335): VERRILL (341). *O. (Ophiectodia) antarctica*, n. sp., partially defined, 'Belgica' Antarctic Expedition; KOEHLER (180) p. 820. *O. aspera*; VERRILL (341) pp. 324, 334. *O. bartletti*, vide *Ophiopora*. *O. bidentata*; DOEDERLEIN (93) p. 225: VERRILL (341) pp. 323, 335: habitat, distrib., incl. *O. fraterna* and perhaps *O. nigra*; GRIEG (139) p. 267. *O. cosmica*; CHUN (63) p. 170: VERRILL (341) pp. 324, 336, 337. *O. crassidens* (pp. 325, 335, 339), *O. cuspidata* (p. 337); VERRILL (341). *O. decora*; KOEHLER (179) pl. xvi. *O. enopla* (pp. 324, 335, 338), *O. fraterna* (pp. 324, 335), *O. granulifera* (pp. 326, 334), *O. marsupialis* (pp. 337, 338), *O. millespina* (pp. 324, 334), *O. normani* (pp. 349, 353), *O. (Ophiectodia) pectinula*, n. sp., West Indies (pp. 325, 334, 338, 340, 342), *O. pentacrinus* (pp. 324, 334), *O. placentigera* (p. 340); VERRILL (341). *O. (Ophiolimna) polaris*, n. sp., 'Belgica' Antarctic Expedition; KOEHLER (180) p. 820. *O. rosea* (pp. 337, 338), *O. scolopendrica* (p. 332 [vide *Ophientrema*]), *O. scutata* (pp. 325, 334, 337) descr., variations from type (p. 341), *O. segesta* (pp. 325, 335, 340), *O. spectabilis* (pp. 325, 335, 338, 339), *O. stellata* (pp. 325, 334); VERRILL (341). *O. troscheli*, vide *Ophiacanthella*. *O. vagans*; KOEHLER (179) pl. xviii. *O. valenciennesi* (pp. 337-340, 348), *O. varispina* (pp. 326, 334, 339), *O. vepratrica* (pp. 326, 335, 340); VERRILL (341).

*Ophiacanthella*, diagnosis (pp. 332, 344), *O. troscheli* (pp. 327, 336-339); VERRILL (341).

*Ophiacanthidae* diagnosed and discussed, incl. *Ophiacantha*, *Ophiomitra*, *Ophiotrema*, *Ophiocamax*, *Ophiolebes*, *Ophiothamnus*, *Ophiocopa*, *Ophiociton*, *Ophiotoma*, and (?) *Ophiolacae*, also *Ophiolacae*, *Ophiomitrella*, *Ophiacanthella*, *Ophioscalus*, *Ophiolimna*, *Ophiopristsis*, *Ophiotreta*, *Ophientodia*, *Ophiectodia*, *Ophiopora*, *Amphipsila*, *Ophioplinthaca*, also sub-fam. *Ophiochondrinae*; VERRILL (341) p. 319 et sqq.

*Ophiactis*; GREGORY in BATHER (19) p. 278. *O. asperula*; KOEHLER (180) p. 818. *O. krebsii*, distinguished from *O. savignyi* and *O. virescens*, colour, habitat, fission; VERRILL (342) p. 586.

- Ophialcaea*, diagnosis (p. 331), *O. nuttingii* (pp. 326, 331, 336, 337), *O. rufescens* (p. 331), *O. tuberculosa* (p. 331); VERRILL (341).
- Ophiambix*; GREGORY in BATHER (19) p. 276: referred to *Ophioscolecidae*; VERRILL (341) p. 358.
- Ophiarachna*; GREGORY in BATHER (19) p. 277.
- Ophiarthrum*; op. cit. p. 278. *O. elegans*; KOEHLER (179) pl. xix.
- Ophidiaster* sp.; ANDREWS (13) p. 117.
- Ophiectodia*, diagnosis; VERRILL (341) p. 331. *O. antarctica*, vide sub *Ophiacantha*. *O. enopla* (p. 331); *O. pectinula*; *O. rosea* and *O. spectabilis* (p. 331); VERRILL (341): vide etiam sub *Ophiacantha*.
- Ophientodia*, diagnosis, *O. cuspidata*, *O. pectinula* [= *Ophiectodia*, sub *Ophiacantha*], *O. scutata*; VERRILL (341) p. 330.
- Ophientrema*, n. s.-g. of *Ophiacantha*, with genotype *O. scolopendrica*; *O. granulosa*: op. cit. p. 332.
- Ophiernus*; GREGORY in BATHER (19) p. 278.
- Ophiaethiops* referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophioblenna*; GREGORY in BATHER (19) p. 278.
- Ophiobranchiontidae*, n. fam. for *Ophiobranchion uncinatus*; VERRILL (341) p. 366.
- Ophiobyrsa*; GREGORY in BATHER (19) p. 276: referred to *Ophioscolecidae*; VERRILL (341) p. 358. *O. serpens*, vide *Ophiobyrsella*.
- Ophiobyrsella*, n. g., with genotype *Ophiobyrsa serpens* Lym. (p. 358), *O. hystricis* (p. 359); VERRILL (341).
- Ophiocamax*; GREGORY in BATHER (19) p. 278: descr., with key to spp.; VERRILL (341) p. 354. *O. austera* (p. 355, pl. xliii), *O. fasciculata* (p. 355); op. cit. *O. gigas*, n. sp., size alone given, 'Belgica' Antarctic Expedition; KOEHLER (180) p. 820. *O. hystrix*, *O. vitrea*; VERRILL (341) p. 355.
- Ophiocampsis* referred to *Ophiothrichidae*; op. cit. p. 304.
- Ophiocentrus*; GREGORY in BATHER (19) p. 278.
- Ophioceramix*; loc. cit. and fig. xxiii.
- Ophiochiton*; GREGORY in BATHER (19) p. 278.
- Ophiochondrella*, n. g. (p. 355), with genotype *O. squamosus* (Lym.) (p. 356); VERRILL (341).
- Ophiochondrinae*, n. sub-fam. of *Ophiacanthidae*, incl. *Ophiochondrus* and *Ophiochondrella*; op. cit. p. 355.
- Ophiochondrus*; GREGORY in BATHER (19) p. 276: emendation of diagnosis; VERRILL (341) p. 356. *O. crassispinus*, specimens referred by Lyman to *O. convolutus* descr.; loc. cit.
- Ophiocytha*; GREGORY in BATHER (19) p. 278.
- Ophiocnemis*; loc. cit.: referred to *Ophiothrichidae*; VERRILL (341) p. 304. *O. cotteaui*, n. sp., coast of Liberia, on gorgonians, types in coll. de Lorient (p. 84, pl. vii); *O. marmorata*, granulation of arms (p. 84), size of dorsal arm-plates (p. 86); *O. venusta*, n. sp., from Singapore, compared with *O. clypeata* and *O. marmorata*, forms link with *Ophiomaza* (p. 81, pl. viii): LORIOI (207).
- Ophiocnida*; GREGORY in BATHER (19) p. 278: discussed (p. 315), restr. and diagnosed with genotype *O. hispida*, incl. *Ophiocnidella*, with key to spp. (p. 317); VERRILL (341). *O. brachiata*, burrowing; ALLEN & TODD (7) p. 187. *O. echinata*; KOEHLER (179) pl. xvii; VERRILL (341) p. 317. *O. filigranea*, *O. hispida*, *O. loveni*, *O. lutkeni* (also as *Amphiodia* q. v.), *O. scabra*, *O. scabriuscula*, *O. sexradia*; VERRILL (341) p. 317.
- Ophiocoeta*; GREGORY in BATHER (19) p. 277.
- Ophiocoma*; op. cit. p. 278: key to French spp.; ACLOQUE (1) p. 456: key to Belgian spp.; LAMEERE (186) p. 33. *O. aethiops*; ANDREWS (13) p. 117; CONANT (71). *O. echinata* spawns from 8 to 10 p.m.; GRAVE (135) p. 85. *O. erinaceus*, endoskeleton; STEWART (318). *O.*

- lubrica*; KOEHLER (179) pl. xx. *O. nigra*; NORDGAARD (245) p. 8: host of Copepod; GIESBRECHT (129) p. 201: distrib.; GRIEG (139) p. 277. *O. pumila*, 6 and 5 rayed; VERRILL (342) p. 583. *O. riisei*, distinguished from *O. echinata*; op. cit. p. 586. *O. scolopendrina*; ANDREWS (13) p. 117.
- Ophiocomidae*; GREGORY in BATHER (19) p. 278.
- Ophiocoris*; GREGORY in BATHER (19) p. 277.
- Ophiocopa*; VERRILL (341) p. 333.
- Ophiocreas*; GREGORY in BATHER (19) p. 276. *O. constrictus*, **n. sp.**, Dusky Sound, N. Z., also Jackson B., type in Otago Mus.; FARQUHAR (107) no fig.
- Ophiocrene*; GREGORY in BATHER (19) p. 276.
- Ophioceten*; op. cit. p. 278. *O. dubium* and *megaloplax*, nomm. nuda 'Belgica' expedition; KOEHLER (180) p. 819. *O. pallidum*; CHUN (63) p. 226. *O. sericeum*; DOEDERLEIN (93) p. 225: habitat, distrib.; GRIEG (139) p. 264.
- Ophiocymbium*; GREGORY in BATHER (19) p. 278.
- Ophiocera*, diagnosis, and *O. stimpsoni*, redescr.; VERRILL (341) p. 362, pl. xlii.
- Ophiocoma*; GREGORY in BATHER (19) p. 277: key to French spp.; ACLOQUE (1) p. 455.  $\pm$  *O. bonnardi*; ENGEL (106) p. 242. *O. longicauda*, no galvanotaxis in adult; NAGEL (239) p. 337.  $\pm$  *O. milleri*; WALTON (346).
- Ophiocermatidae*, diagnosis; GREGORY in BATHER (19) p. 277.
- +*Ophio-Encrinasteriæ*, coincides with and precedes *Lysophiuræ* Greg., previously called a 'Family' only because Stuerz followed Zittel's system (p. 184), re-defined as a family (pp. 195, 198), recent allies (p. 199); STUERTZ (325).
- Ophiogeron*; GREGORY in BATHER (19) p. 276, fig. xxvi: discussed, referred to *Ophiocolecidae*; VERRILL (341) p. 357.
- Ophioglypha*; GREGORY in BATHER (19) p. 278, fig. xix: key to Belgian spp.; LAMEERE (186) p. 32. *O. deshayesi*; CHUN (63) p. 170. *O. carinifera*, *doederleini*, *frigida*, and *gelida*, nomm. nuda 'Belgica' expedition; KOEHLER (180) p. 819. *O. hexactis*, with young in brood-pouch, text-figg.; CHUN (63) pp. 253, 254. *O. lacertosa*, host of Copepod; GIESBRECHT (129) p. 201. *O. lymani*; CHUN (63) p. 170. *O. robusta* and *O. sarsi*; DOEDERLEIN (93) p. 224. *O. sinensis* and *O. stellata*; KOEHLER (179) pl. xv.
- Ophiogona*; GREGORY in BATHER (19) p. 277.
- Ophiogymna*; op. cit. p. 278: referred to *Ophiiothrichidae*; VERRILL (341) p. 304.
- Ophiokelidae*, **n. fam.** for *Ophiokelus*; VERRILL (341) p. 361.
- Ophiokelus*; GREGORY in BATHER (19) p. 276: not degenerate but primitive, and as much *Zygophiuræ* as *Streptophiuræ*; STUERTZ (325) p. 185. *O. pellucidus* and *O. umbella*; VERRILL (341) p. 361.
- Ophioteles*; GREGORY in BATHER (19) p. 278.
- Ophiotelesidae*, diagnosis; loc. cit.
- Ophioteles*; loc. cit.: key to French spp.; ACLOQUE (1) p. 456. *O. elegans*, breeding period; WILSON (35) p. 350. *O. paucispina*; VERRILL (342) p. 585. *O. rugosa*; KOEHLER (179) pl. xv.
- Ophiolimna*, diagnosis (pp. 333, 345), *O. bairdii* (pp. 327, 335, 340), *O. mixta* (pp. 327, 336, 337, 340) descr. (p. 346); VERRILL (341). *O. polaris*, vide sub *Ophiacantha*.
- Ophiolophus* referred to *Ophiiothrichidae*; op. cit. p. 304.
- Ophiomartus* [err. pro *-mastus*]; GREGORY in BATHER (19) p. 278.
- Ophiomastix*; loc. cit. *O. luetkeni*, **n. sp.**, Ternate and Cebu; PFEFFER (267).
- Ophiomastus ludwigi*, **n. sp.**, incompletely defined, 'Belgica' Antarctic expedition; KOEHLER (180) p. 819.



- Ophiomaza*; GREGORY in BATHER (19) p. 278: referred to *Ophiothrichidae*; VERRILL (341) p. 304. *O. moerens*; KOEHLER (179) pl. xxi.
- Ophiomitra*; GREGORY in BATHER (19) p. 278: diagnosis (p. 349), key to spp. (p. 350); *O. exigua* referred to *Ophiothamnus* (p. 350); *O. normani* referred to *Ophiacantha* (p. 349); *O. ornata* (p. 350); *O. spinea* (p. 351); *O. valida* (p. 350), Lyman's types were immature (p. 349), redescri. (p. 353): VERRILL (341).
- Ophiomitrella*, diagnosis (pp. 332, 352), *O. cordifera* (p. 352), *O. cornuta* (p. 352), *O. exigua* (p. 353 [also as *Ophiomitra* and *Ophiothamnus*, qq.v.]), *O. globulifera* (p. 352), *O. laevipellis* (pp. 332, 334), redescri., variations from type (p. 343, see also pp. 326, 336, 339, 352); VERRILL (341).
- Ophiomusium*; GREGORY in BATHER (19) p. 278.
- Ophiomyces*; op. cit. p. 276. *O. frutescens*, *O. grandis*, *O. mirabilis*, *O. spathifer*; VERRILL (341) p. 360.
- Ophiomycetidae*, **n. fam.**, with sub-famm. *Ophiomycetinae* and *Ophiotholinae*; op. cit. p. 359.
- Ophiomycetinae*, **n. sub-fam.** for *Ophiomyces*; op. cit. p. 360.
- Ophiomyxa*; op. cit. p. 361: in two sections; GREGORY in BATHER (19) p. 276: key to French spp.; ACLOQUE (1) p. 457.
- Ophiomyxidae* restr., diagnosis, incl. only *Ophiomyxa* and *Ophiodera*; VERRILL (341) p. 361.
- Ophionema*; GREGORY in BATHER (19) p. 278.
- Ophionephthys*; loc. cit.
- Ophionereis*; loc. cit.
- Ophiopaepale*; loc. cit.
- +*Ophiopege*, vide *Aganaster*.
- Ophiopelte*, s.-g. of *Amphiura* [not n. s.-g. as queried in Zool. Rec. 1899, but now ascribed to both Sars and Ljungman]; VERRILL (341) pp. 307, 310.
- Ophiopeltis*; GREGORY in BATHER (19) p. 278.
- Ophiopeza*; op. cit. p. 277.
- Ophiopholis*; op. cit. p. 278, fig. xiii. *O. aculeata*; DOEDERLEIN (93) p. 225: spawns from 8 to 10 p.m.; GRAVE (135) p. 85: habitat, distrib., perhaps incl. *O. japonica*, *O. mirabilis*, *O. caryi*, and *O. kennerlyi* as varr.; GRIEG (139) p. 264.
- Ophiophragmus* [err. pro *-phragmus*]; GREGORY in BATHER (19) p. 278.
- Ophiophyllum*; loc. cit.
- Ophioplax*; op. cit. p. 277.
- Ophiopleura borealis*; KNIPOVICH (175) p. 458: habitat, measurements, distrib.; GRIEG (139) p. 261.
- Ophioplinthaca*, **n. g.** (p. 351), *O. carduus* (p. 351), *O. chelys* (p. 352), *O. dipsacos* (Lym.) genotype (p. 351), *O. incisa* (p. 351), *O. plicata* (p. 351), *O. sarsii* (p. 352); VERRILL (341).
- Ophioplinthus*; GREGORY in BATHER (19) p. 278. *O. medusa*; CHUN (63) p. 226.
- Ophioplocus*; GREGORY in BATHER (19) p. 278.
- Ophioplus*, diagnosis, *O. tuberculosus*, mimics *Gorgonella*; VERRILL (341) p. 365, pl. xliii.
- Ophiopora*, diagnosis (pp. 333, 345), *O. bartletti* (pp. 327, 335, 337-340, 345; VERRILL (341)).
- Ophiopristis*, diagnosis (pp. 333, 347), *O. cervicornis* (pp. 328, 336-340, 347), *O. ensifera* (pp. 328, 336-340, 347), *O. hirsuta* (pp. 328, 336, 338-340, 347); op. cit.
- Ophiopsammium*; GREGORY in BATHER (19) p. 278: referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophiopsila*; GREGORY in BATHER (19) p. 278: distinguished from *Amphiopsila* and referred to *Ophiocomidae*; VERRILL (341) p. 348: key to



- French spp.; ACLOQUE (1) p. 457. *O. pantherina*; KOEHLER (179) pl. xvi. *O. riisei*; VERRILL (342) p. 586.
- Ophiopteris*; GREGORY in BATHER (19) p. 278.
- Ophiopteron*; loc. cit.: referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophiopus*; GREGORY in BATHER (19) p. 278. *O. arcticus*, habitat, distrib.; GRIEG (139) p. 266.
- Ophiopyren*; GREGORY in BATHER (19) p. 277. *O. sp.* nondescr.; CHUN (63) p. 170. *O. regulare*, **n. sp.**, incompletely defined, 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819.
- Ophiopyrgus*; GREGORY in BATHER (19) p. 277, fig. xxv. *O. australis*, **n. sp.**, incompletely defined, 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819.
- Ophioscalus*, diagnosis (p. 331), *O. echinulatus* (pp. 327, 331, 334, 336, 338, 339); VERRILL (341).
- Ophiosciasma*; GREGORY in BATHER (19) p. 276: discussed, referred to *Ophioscolecidae*; VERRILL (341) p. 357.
- Ophioscolecidae*, vide *Ophioscolecidae*.
- Ophioscolex*; GREGORY in BATHER (19) p. 276: discussed; VERRILL (341) p. 357. *O. fragilis*, **n. sp.**, off Barbadoes, 82 fms.; op. cit. p. 358, no fig. *O. glacialis*; DOEDERLEIN (93) p. 226: habitat, distrib., measurements, colour, breeding-period; GRIEG (139) p. 268. *O. purpureus*; KNIPOVICH (175) p. 458.
- Ophioscolicidae* [err pro *-scolecidae*] discussed; VERRILL (341) p. 357.
- Ophiosphærea* referred to *Ophiothrichidae*; op. cit. p. 304.
- Ophiostigma*; GREGORY in BATHER (19) p. 278. *O. isacanthum*, 6 and 5 rayed; VERRILL (342) p. 583.
- Ophioteresis*, said to have a shallow ambulacral groove, open as in *Ast.*; GREGORY in BATHER (19) pp. 238, 262, 270, 274, 275, 276, fig. xiv: the statement denied by MINCHIN and PYCRAFT in Reviews.
- Ophioteresa* [sic, pro *-esis*] referred to *Protophiuræ*; STUERTZ (325) pp. 189, 190.
- Ophiothamnus*; GREGORY in BATHER (19) p. 278. *O. exigua* (p. 328 [vide etiam sub *Ophiomitra* et *Ophiomitrella*]), *O. gracilis* (pp. 328, 334, 340), *O. vicarius* (p. 328); VERRILL (341).
- Ophiothela*; GREGORY in BATHER (19) p. 278: referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophiotholia*; GREGORY in BATHER (19) p. 276: not degenerate but primitive, and as much *Zygophiuræ* as *Streptophiuræ*; STUERTZ (325) p. 185. *O. supplicans*; VERRILL (341) p. 361.
- Ophiotholinae*, **n. sub-fam.** for *Ophiotholia*; op. cit. p. 360.
- Ophiothric[h]idae*, diagnosis; GREGORY in BATHER (19) p. 278: diagnosis, incl. *Ophiothrix*, *Ophiothela*, *Ophiocnemis*, *Ophiopsammium*, *Ophiomaza*, *Ophiogymna*, *Ophiocampsis*, *Ophiotrichoides* [sic], *Ophiopteron*, *Lutkenia*, *Gymnolophus*, *Ophiocæthiops*, *Ophiosphærea*, *Ophiolophus*, habitat, distrib.; VERRILL (341) p. 304.
- Ophiotrichoides* referred to *Ophiothrichidae*; loc. cit.
- Ophiotrix*, referred to *Ophiothrichidae*; loc. cit.: GREGORY in BATHER (19) p. 278: key to French spp.; ACLOQUE (1) p. 457: key to Belgian spp.; LAMEERE (188) p. 32. *O. angulata*; VERRILL (342) p. 585. *O. clypeata* is young of *Ophiocnemis marmorata*; LORIOI (207) pp. 83, 86. *O. comata* (pl. xx), *O. diligens* (pl. xxi); KOEHLER (179). *O. fragilis*; ALLEN & TODD (7) p. 187: anatomy described as typical *Oph.*; APOSTOLIDÉS (17): galvanotaxis of larva; CARLGREN (56) p. 474: host of Copepod; GIESBRECHT (129) p. 201: vide etiam *Rosula*. *O. innocens* (pls. xviii, xix), *O. insidiosa* (pl. xvii), *O. otiosa* (pl. xix), *O. propinqua* (pls. xviii, xix), *O. speciosa* (pl. xvii); KOEHLER (179). *O. suensonii*; VERRILL (342) p. 585.
- Ophiotrema*; GREGORY in BATHER (19) p. 278: VERRILL (341) p. 350. *O. alberti*; loc. cit.

- Ophiotreta*, diagnosis (pp. 333, 347), *O. lineolata* (pp. 328, 336, 337, 339, 340, 348), *O. placentigera* (p. 348), *O. sertata* (pp. 328, 336-340, 348). *O. valenciennesi* (p. 348); VERRILL (341).
- Ophiotrochus*; GREGORY in BATHER (19) p. 278.
- Ophiozona*; loc. cit. *O. nivea* (p. 306) var. *compta* (p. 306, pl. xliii), variations in oral shields and in dorsal plating; VERRILL (341).
- Ophiura*; GREGORY in BATHER (19) p. 278, figg. xv-xviii and xxiv: key to French spp.; ACLOQUE (1) p. 456. *O. brevicauda*; VERRILL (342) p. 584. *O. brevispina*, breeding period; WILSON (355) p. 350: incl. *O. serpens* and *O. olivacea*, distrib., bionomics, development from 36 hours to eight days, larva compared with that of *Antedon*; GRAVE (135). *O. ciliaris*; ALLEN & TODD (7) p. 187: descr. as typical *Oph.*; GREGORY in BATHER (19) p. 262 et seq., figg. xv-xviii. *O. ciliata*, distrib.; GRIEG (139) p. 277. *O. cinerea*; VERRILL (342) p. 585. *O. cuspidifera*, vide *Hemieuryale pustulata*; VERRILL (341) p. 363. *O. nodosa*, habitat, distrib., measurements (p. 263), *O. robusta*, habitat, distrib. (p. 262), *O. sarsi*, ditto (p. 261); GRIEG (139). +*O. serrata*; DIBLEY (92) p. 493. *O. stuwitzii* not a Spitzbergen sp.; GRIEG (139) p. 263. +*O. ?subcylindrica*; BRYDONE (51) p. 12.
- Ophiurella*; GREGORY in BATHER (19) p. 278.
- +*Ophiurina*; op. cit. p. 275.
- +*Ophiurinae*, diagnosis; loc. cit.: as sub-fam. of *Protophiureae*, defined, incl. *Ophiurina*, *Protaster decheni*, and *Tremataster difficilis*; STUERTZ (325) pp. 196, 200.
- +*Palaeophiomys*, n. g. with genotype *Bundenbachia grandis*; STUERTZ (325) p. 202.
- +*Palaeophiomysidae*, as sub-fam. of *Protophiureae*, incl. *Palaeophiomys*; loc. cit.
- +*Palaeophiura*; GREGORY in BATHER (19) p. 274.
- +*Ophiuridae*; STUERTZ (325) p. 195: diagnosis; GREGORY in BATHER (19) p. 274.
- +*Palaeospondylidae* [melius *Palastropectinidae*] as sub-fam. of *Protophiureae*, defined; STUERTZ (325) p. 201.
- +*Palaeospondylus*, **nom. nov.** pro *Palastropecten* Stuerz, because *Oph.* and not *Ast.* (p. 190) [an insufficient reason, and in any case preocc. by *Palaeospondylus* Traquair], removed by arm-structure from *Furcasteridae* (p. 191); STUERTZ (325).
- Palasterina primaeva*, discussed on basis of previous descriptions; op. cit. p. 214.
- Palasterinae* [under this head is a discussion of *Palasterina* McCoy; it is not clear whether a sub-fam. is intended, or a plural of *Palasterina*, or whether it is a misprint for *Palasterinidae*]; op. cit. p. 213.
- +*Palastropecten*; GREGORY in BATHER (19) p. 275: vide etiam *Palaeospondylus*.
- Paramphiura*, diagnosis; VERRILL (341) p. 306.
- +*Pectinura* Heller non Forbes; GREGORY in BATHER (19) p. 278, fig. xxii. *Pectinura* Forbes non Heller, *P. gorgonia*; KOEHLER (179) pl. xv.
- Polypholis*; GREGORY in BATHER (19) p. 278.
- +*Protaster*; op. cit. p. 274: Gregory's view as to arm-ossicles confirmed; STUERTZ (325) p. 186. *P.* sp. nondescr. and *P. decheni* var.; DESTINEZ (91). *P. forbesi*; SCHUCHERT (303) p. 280.
- +*Protasteridae* Greg.; STUERTZ (325) p. 195: diagnosis; GREGORY in BATHER (19) p. 274.
- +*Protophiurae* (or *-ureae*), the conception and name maintained, anatomy discussed (p. 189), diagnosis (p. 196), redefined and divided into sub-families [sic] *Ophiurinae*, *Palaeospondylidae*, *Palaeophiomysidae*, *Onychasteridae*, *Lapworthuridae*, *Furcasteridae*, *Eophiuridae*, *Aganasteridae* (p. 200); STUERTZ (325).

- +*Ptilonaster*; GREGORY in BATHER (19) p. 274: not placed in *Ophio-Encrinasteriae*; STUERTZ (325) p. 188.  
*Rosula* Linck = *Ophiothrix fragilis*; GREGORY in BATHER (19) p. 260.  
*Sigsbeia*; op. cit. p. 276. *S. murrhina*, mimics *Gorgonella*, young figd.; VERRILL (341) p. 365, pl. xlii.  
*Stella lacertosa* Linck = *Ophiura ciliaris*; *S. lumbricalis longicauda* Linck, = *Ophioderma longicauda*; GREGORY in BATHER (19) p. 260.  
*Stenocephalus indicus*; KOEHLER (179) pls. xxi, xxii.  
*Streptophiuræ*, diagnosis, divided into families *Ophiurinae*, *Lapworthuridae*, *Eoluididae*, *Onychasteridae*, *Eucladiidae*, and living *Streptophiuræ*; GREGORY in BATHER (19) pp. 274-276: discussed as classificatory division, roughly equivalent to *Ophiomyxidae* or *Protophiuræ* of Stuert; STUERTZ (325) pp. 178, 180, 196.  
+*Sturtzura*; GREGORY in BATHER (19) p. 274.  
+*Taeniaster cylindricus* (*Taeniura* Greg.) and *T. spinosus* referred to *Ophio-Encrinasteriae*; STUERTZ (325) p. 200.  
+*Taeniura* Greg.; GREGORY in BATHER (19) p. 274: vide etiam *Taeniaster*.  
+*Tremataster*; GREGORY in BATHER (19) p. 275.  
*Trichaster*; op. cit. p. 276, fig. xxx. *T. palmiferus*; VERRILL (341) p. 367.  
*Trichasteridae*, diagnosis; GREGORY in BATHER (19) p. 276.  
*Trichastrinae* [sic], diagnosis; VERRILL (341) p. 367.  
*Zygophiuræ*, diagnosis, divided into Families *Ophiodermatidae*, *Ophiopodidae*, *Amphiuridae*, *Ophiocomidae*, and *Ophiothrid[h]idae*; GREGORY in BATHER (19) p. 277: discussed as classificatory division; STUERTZ (325) p. 178.  
*Zygostichia* Haeckel, discussed; op. cit. p. 194.

## F. CRINOIDEA.

- Crinoidea*, diagnosis (p. 94), history of previous classifications (p. 138), and full systematic arrangement under sub-classes *Mono-* and *Dicyclica* (p. 142 et sqq.); BATHER (19).  
Classification of *Inadunata* into *Monocyclica* and *Dicyclica* criticised; JAEKEL (167) p. 372.  
+*Abacocrinus*, incl. ? *Carolcr.*, discussed; BATHER (19) p. 165: *A. barrandei*, vide sub *Carolcr.*  
+*Abracrinus*, vide *Carpocrinus*.  
+*Abrotocrinus*, vide *Scaphiocrinus*.  
+*Acacocrinus*; BATHER (19) p. 166.  
+*Acanthocrinus*; op. cit. p. 201.  
+*Achradocrinus*; op. cit. p. 178, fig. xcv: referred to *Gasterocomidae* (p. 155), to *Cyathocrinidae* (p. 158); ZITTEL & EASTMAN (369): former position correct; BATHER in Review.  
+*Acrochordocrinus*, incl. *Cyclocr.* d'Orb. (q.v.), *Mespilocr.* Quenst.; BATHER (19) p. 192.  
+*Actinocrinidae*, diagnosis; op. cit. p. 159.  
+*Acrocrinus*, discussed, with restoration of *A. amphora*; loc. cit. and fig. lxxiii.  
+*Actinocrinidae*, diagnosis, genera discussed; BATHER (19) p. 169.  
+*Actinocrinoidea*, Sub-order, diagnosis, divided into families *Actinocrinidae* and *Amphoraerinidae*; loc. cit.  
+*Actinocrinus*, incl. *Amphora*, *Blairocr.*, descr.; loc. cit. and fig. lxxxiii. *A. seminultiramosus*, n. sp., Keokuk or Knob Limestone, near Salem, Ind., type in Amer. Mus.; WHITFIELD (350) p. 23, pl. iii.  
*Actinometra*, incl. *Comaster*, *Comatula* pars, *Phanogenia*; BATHER (19)



- p. 196. *A. sp. indet. valida*-group, *A. coppingeri*, *A. elongata*, var., and *A. fimbriata*; PFEFFER (267). †*A. formae*, **n. sp.**, Upper Helvetian near Torino, type one dorsal cup in Mus. Geol. Torino; NOELLI (243) p. 28, pl. i. *A. litoralis*, *A. nigra*, *A. novae guineae*, *A. parvicirra*, and *A. pectinata*; PFEFFER (267). †*A. vagnasensis* occurs in Aptian and is perhaps syn. of *Antedon ricordeanus* (q.v.); LORIOLE (207) p. 76.
- Actinometridae*, diagnosis; BATHER (19) p. 196.
- †*Adelocrinus*, syn. of *Hexacr.* or *Arthracantha*; op. cit. p. 201. †*A. hystrix*, vide *Perischodomus* (IV, c).
- †*Adunata*, Order, diagnosis, evolution and relations of genera; BATHER (19) p. 155.
- †*Aesiocrinus*; op. cit. p. 180: vide etiam sub *Phialocr.*
- †*Agaricocrinus*, discussed; BATHER (19) p. 167. *A. adamsensis*, rediagnosed, incl. *A. hodgsoni* (p. 183), *A. americanus*, rediagnosed, incl. *A. tuberosus*, *A. bullatus*, *A. pentagonus*, *A. excavatus*, *A. nodosus*, *A. crassus* (?), *A. elegans*, *A. macadamsi*, *A. nodulosus*, *A. splendens*, *A. dissimilis*, *A. gorbyi*, *A. indianensis*, *A. arcuata*, *A. profundus*, *A. tugurium*, *A. iowensis*, *A. keokukensis*, *A. nodulosus*, variations of tegmen figured (p. 184, pls. xviii-xxi); *A. brevis*, rediagnosed, incl. *A. pyramidatus*, *A. stellatus*, *A. corniculus*, *A. geometricus*, *A. fiscellus*, *A. corrugatus* (p. 182); *A. chouteauensis*, rediagnosed, incl. *A. blairi*, *A. germanus*, *A. sampsoni* (p. 182); *A. coreyi*, rediagnosed, incl. *A. springeri* (p. 184); *A. gracilis*, rediagnosed (p. 183); *A. illinoisensis*, rediagnosed (p. 183); *A. inflatus*, rediagnosed, incl. *A. planoconvexus*, *A. decornis*, *A. convexus* (p. 183); KLEM (173). *A. louisianensis*, **n. sp.**, base of Lower Burlington Limestone, Louisiana, Mo.; ROWLEY (289). *A. ornotrema*, rediagnosed, incl. *A. bellatrema* (p. 183); *A. wortheni*, rediagnosed, incl. *A. whitfieldi*, *A. conicus* (p. 184); KLEM (173).
- †*Agassizocrinus*, incl. *Astylocr.*; BATHER (19) p. 181. *A. carbonarius*, now first descr.; BEEDE (29) p. 45, pl. vi.
- †*Agriocrinus*, vide *Hapalocrinus*.  
*Alecto*, vide *Antedon*.
- †*Allagecrinidae*, diagnosis, *Allagecrinus*, discussed; BATHER (19) p. 151.
- †*Allionia*, syn. of *Antedon*; op. cit. p. 201: discussed; NOELLI (243) p. 15.
- †*Alloocrinus*; BATHER (19) p. 162.
- †*Alloprosalloocrinus*; op. cit. p. 167.
- †*Ambacrinus*, vide *Coccoocrinus*.
- †*Ampheristocrinus*; BATHER (19) p. 173, fig. lxxxviii: diagram; WELLER (348) p. 67: not based on genotype; BATHER in Review. *A. dubius*, **n. sp.**, Niagaran, Romeo, Ill.; WELLER (348) p. 67, pl. xiv.
- †*Amphora*, vide *Actinocrinus*.
- †*Amphoracrinidae*, diagnosis; BATHER (19) p. 170.
- †*Amphoracrinus*, discussed; loc. cit.
- †*Ancyrocrinus*, vide *Myrtillocrinus*.
- †*Anisocrinus*, redescri.; BATHER (19) p. 189.
- †*Anomalocrinus*, incl. *Ataxocr.*, discussed; op. cit. p. 146, fig. lviii.
- Antedon*; BURBIDGE (52): incl. *Alecto*, *Comatula*, *Hibernula*, *Phytocr.*, *Solanocr.*, *Hyponome*, and *Geocoma* Fraas; BATHER (19) p. 195, figg. ix, xv, xviii, xix, xxx, xxxiii, xlvi, xlvii, xlix, liv, lv: generalised section, new diagram; PERRIER (262) p. 250, fig. 183: (s.v. *Comatula*) key to French spp.; ACLOQUE (1) p. 461. *A. sp.*, a hundred taken in a bow-net at 175 metres on Gorrige bank; RICHARD (282) p. 78. †*A. almerai*, **n. sp.**, Aptian, near Barcelona, allied to *Decameros* (i.e. *A. ricordeanus* d'Orb.), type in coll. S. Almera; LORIOLE (207) p. 74, pl. viii. †*A. anglesensis*, a centrodorsal, compared with *A. alticeps*; NOELLI (243) p. 23, pl. i. *A. bifida* (incl. *A. rosacea*), distrib., habitat, habits, anat. descr. as typical *Crin.*; CUÉNOT (75): ontogeny (pp. 6 et sqq. figg. iv, vi, viii, x), axial and chambered organ (p. 24, fig. xx);



BATHER (19): general anat. recapitulated, anat., histol., and physiol. of joints of arms and cirri; BOSSHARD (44): colour variation, commensal; MALARD (222) p. 28: no galvanotaxis in adult; NAGEL (239) p. 337: origin of gonads in larva; RUSSO (292): endoskeleton; STEWART (318). †*A. burgundiaca*; LISSAJOUS (195) p. 25. †*A. conoidea*; DEECKE (82) p. 71. *A. cumingi*; PFEFFER (267). †*A. depereti*, centrodorsal, differences from type; NOELLI (243) p. 19, pl. i. †*A. depressus* (d'Orb. sub *Decameros*), notes on the type; LORIOL (207) p. 77. *A. doederleini*, n. sp. of *Palmata* group, from Kagoshima, Japan; op. cit. p. 93, pl. ix. *A. eschrichti*; DOEDERLEIN (93) p. 228; HARTLAUB (153) pp. 177, 180, 187, 190: large at Spitzbergen; SCHAUDINN (296) p. 236: 102 metres, Sassen B., Spitzbergen; RICHARD (282) p. 78. †*A. fischeri*; BRUNHUBER (50). †*A. fontannesii*, centrodorsal, differences from type; NOELLI (243) p. 17, pl. i. *A. mediterranea*, host of Copepod; GIESBRECHT (129) p. 201. †*A. michelottii*, n. sp., Upper Helvetian near Torino, type at Mus. Geol. Torino (p. 16, pl. i); †*A. minimus*, n. sp., Upper Helvetian near Torino, type 1 dorsal cup in Mus. Geol. Torino (p. 21, pl. i); NOELLI (243). †*A. miocenicus*, vide *A. rhodanicus*. †*A. mystica*; DEECKE (82) p. 71. †*A. nicolasi*, n. sp., Upper Helvetian near Torino, type 1 centrodorsal in Mus. Geol. Torino (p. 22, pl. i); †*A. oblitus*, dorsal cup descr., compared with *A. rhodanicus* (p. 13, pl. i); NOELLI (243). †*A. oxyacantha*; PFEFFER (267). †*A. paradoxa*; DEECKE (82) p. 71. †*A. paronai*, n. sp., Upper Helvetian near Torino, type 1 centrodorsal in Mus. Geol. Torino (p. 24, pl. i); †*A. pellati*, centrodorsals descr., differences from type (p. 27, pl. i); NOELLI (243). †*A. pertusa*, nom. nud.; CLARK (64) p. 5. *A. phalangium* (pp. 48, 487), *A. proluxa* (p. 487); CHUN (63). †*A. ricordeanus* (d'Orb. sub *Decameros*) redescri., perhaps incl. *Actinometra vagnasensis*; LORIOL (207) p. 76. †*A. rhodanicus*, discussed, incl. *A. miocenicus*; NOELLI (243) p. 15. *A. rosacea*, vide *A. bifida* and ? *A. mediterranea*. †*A. scrobiculata*; LISSAJOUS (195) p. 24. †*A. stellatus*, n. sp., Upper Helvetian near Torino, type 1 centrodorsal in Mus. Geol. Torino (p. 26, pl. i); †*A. taurinensis*, n. sp., Upper Helvetian, near Torino, types 2 dorsal cups in Mus. Geol. Torino (p. 20, pl. i); NOELLI (243).

*Antedonidae*, diagnosis, genera discussed; BATHER (19) p. 195.

†*Anthemocrinus*; op. cit. p. 200.

†*Anthocrinus*, vide *Crotalocrinus*.

†*Aorocrinus*, vide *Coelocrinus*.

*Apiocrinidae*, diagnosis and genera discussed; BATHER (19) p. 191.

†*Apiocrinus*, descr.; loc. cit. and fig. xvii. *A.* sp.; HUENE (166) pp. 355, 362. *A.* sp. indet. (p. 5); *A. elegans* [i.e. *A. elongatus* Miller], doubtful columnals, zone of *Eudesia cardium* and Callovian (p. 4); *A. parkinsoni* [i.e. *A. elegans* Deffr. non d'Orb.], fine specimen from Lacrost near Tournus descr. (p. 3, pl. i); LISSAJOUS (195). *A. roseaceus*?; LEBEDEV (192) p. 16.

†*Aporocrinus*, is an *Agelaerini*; BATHER (19) p. 201.

†*Arachnocrinus*; op. cit. p. 175.

†*Archaeocrinus*; op. cit. p. 200, fig. cxxv. *A. depressus*, n. sp., Niagaran, various locc. near Chicago; WELLER (348) p. 89, pl. iii: anals not characteristic of genus; BATHER in Review.

†*Articrinus*, vide *Dactylocrinus* Quenst.

*Articulata* Miller (p. 138), Müller (pp. 138, 141), W. & Sp. (p. 139), Zittel (p. 139), grade of *Dendrocrinoidea* (p. 182); BATHER (19).

†*Arthracantha*, incl. *Hystericrinus*; op. cit. p. 158.

†*Ascocrinus barrandei*; BIGOT (35).

†*Aspidocrinus*; BATHER (19) p. 201. *A. callosus*, *A. digitatus*, and *A. scutelliformis*; SCHUCHERT (303) p. 280.

- †*Asteria*; BATHER (19) p. 201.  
*Asterias*, syn. of *Antedon* and *Actinometra*; loc. cit.
- †*Asteriatites*, syn. of *Antedon*; loc. cit.
- †*Asterocrinus* Lyon, vide *Pterotocrinus*.
- †*Asterocrinus* Münster; BATHER (19) p. 201.
- †*Astrios* Troost; op. cit. p. 202.  
*Astrocoma*, syn. of *Antedon* and *Actinometra*; loc. cit.
- †*Astrocrinus* Conr., vide *Melocrinus*.
- †*Astrocrinus* Cumb.; BATHER (19) p. 202.
- †*Astropodia*, its meaning; loc. cit.
- †*Astylocrinus*, vide *Agassizocrinus*.
- †*Ataxocrinus*, vide *Anomalocrinus*.
- †*Atelecrinidae*, diagnosis; BATHER (19) p. 195.  
*Atelecrinus*; loc. cit. & fig. cxviii.
- †*Atelestocrinus*; op. cit. p. 179, fig. xcvi.
- †*Atocrinus*, probably *Platycr.*; op. cit. p. 202.
- †*Aulocrinus*; op. cit. p. 180. *A. agassizi*, pores in anal sac; SPRINGER (314) p. 140, pl. xvi.
- †*Austinocrinus*; BATHER (19) p. 183.
- †*Bactrocrinus*, discussed; op. cit. p. 173.
- †*Baerocrinus*, vide *Hoplocrinus*.
- †*Balanocrinus* Troost, syn. of *Lampterochr.*; BATHER (19) p. 202.
- †*Balanocrinus* Lor.; op. cit. p. 182, fig. ci. *B. antiquus* (p. 20); *B. bathonicus*, large columnals approaching *B. pentagonalis* (p. 21); *B. campichei*, distinction from *B. subteres* (p. 23); *B. changarnieri* (p. 23); *B. inornatus* (p. 21); *B. marioni* (p. 23); *B. moeschi* (p. 21): LISSAJOUS (195). *B. pentagonalis*; op. cit. p. 22: HUENE (166) p. 355: KOBY (177) p. 200: LORIOLE (206) p. 182: ROLLIER & TRIBOLET (284). *B. cf. pentagonalis*, columnals from Callovian (p. 21, pl. iii); *B. pernaldensis* (p. 23); *B. stockhornensis*, probably var. of *B. subteres* (p. 22): LISSAJOUS (195). *B. subteres*; HUENE (166) pp. 351, 352, 354, 357, 359: KOBY (177) p. 214: roots figd., perhaps only fixed in young, also meristic variation, see II, B, ii, d, 1; LISSAJOUS (195) p. 22, pl. iii. *B. subteroides*; op. cit. p. 20.
- †*Barrandeocrinidae*, diagnosis; BATHER (19) p. 166.
- †*Barrandeocrinus*, incl. ? *Cylicocr.* Miller, discussed; loc. cit. and fig. lxxx.
- †*Barycrinus*; BATHER (19) p. 179.  
*Bathycrinidae*, diagnosis; op. cit. p. 185.
- Bathycrinus*, incl. *Ilycr.*, morphology and systematic position discussed; op. cit. p. 186, figg. xviii, xxiii, liii, cv, cvii. *B. sp.* nondescr., Antarctic; CHUN (63) pp. 226, 486.
- †*Batocrinidae*, diagnosis, genera discussed; BATHER (19) p. 167.
- †*Batocrinoidea*, Sub-order, diagnosis, divided into families *Tanao-*, *Xeno-*, *Carpo-*, *Barrandeo-*, *Coelo-*, *Bato-*, *Periecho-crinidae*; op. cit. p. 164.
- †*Batocrinus*; op. cit. p. 167, fig. lxxxii. *B. prodigialis* agrees with type specimens of *Actinocr. yandelli* Shumard; KLEM (173) p. 174. *B. rotadentatus*, specimen figured by Wachsmuth & Springer, N. Amer. Camerata, pl. xlvi, fig. 7, is *B. calvini*, but figg. 6a, 6b, named *Lobocrinus aequibrachiatus*, are this sp.; ROWLEY (290) p. 271. *B. (!) springeri*, n. sp., top of Lower Burlington Limestone, Louisiana, Mo.; op. cit. (289) p. 72, pl. ii.
- †*Belemnocrinidae*, diagnosis; BATHER (19) p. 152.
- †*Belemnocrinus*, discussed, *B. florifer*, *B. typus*, stems; loc. cit.
- †*Beyrichocrinus*; op. cit. p. 168. *B. humilis*, structure discussed, Waagen & Jahn's account criticised, probably Monocyclic, and perhaps a Periechocrinid; BATHER (21) pp. 103, 105, fig. 1.
- †*Blairocrinus*, vide *Actinocrinus*.
- †*Bohemicocrinus*, discussed; BATHER (19) p. 202: *B.* (why not *Bohemi-*

*crinus* ?), *pulverens* (corrected to *pulvereus*) structure discussed, apparently a *Carpocr.* or *Desmidocr.*; BATHER (21) p. 106, fig. 2: vide etiam *Vetaviv.*

†*Botryocrinidae*, diagnosis; BATHER (19) p. 179.

†*Botryocrinus*, incl. *Sicyocrinus*; loc. cit. and figg. iii, xiii, xxi, xcvii: name must yield to *Sicyocrinus* because the latter appears on the previous page "und somit auf Priorität Anspruch hat"; JAEKEL (167) p. 373. *B. polyxo*, redescri.; WELLER (348) p. 66, pl. xiv.

*Bourgueticrinidae*, diagnosis, genera descr.; BATHER (19) p. 193.

†*Bourgueticrinus*, descr.; op. cit. p. 194. *B. sp.*; SCHMIDT (301) p. cxcviii. *B. sp.*, in Eocene; REIS (278) p. 84. *B. aequalis*, original drawings; BATHER (19) p. 193, fig. cxv: as zonal fossil; ROWE (288) p. 344. *B.?* *didymus*, columnals, distinguished from *B. cornutus*; OPPENHEIM (251) p. 77, pl. xviii. *B. ellipticus*; DEECKE (82) pp. 42, 55, 71: DIBLEY (92) p. 493: and other forms, figured but not named, as zonal fossils; ROWE (288) pp. 297, 304, 344, pl. viii. *B. goniaster* [sic] in Eocene; REIS (278) p. 84.

†*Brachiocrinus*, vide *Herpetocrinus*.

†*Brahmacrinus*, n. g., "an auctant form, uniting the *Melocrinidae* and *Platycrinidae*," with genotype *B. ponderosus*, n. sp., Carboniferous Limest., Lancashire and Yorkshire [?], types in Oxford Mus. and Brit. Mus.; SOLLAS (312), p. 264, pl. xvi, and text-figg. 1, 2: in opinion of Wachsmuth & Springer and of the speaker is only a *Platycrinus*; BATHER in discussion.

†*Briarocrinus*; BATHER (19) p. 162.

†*Bursacrinus*, incl. *Synphocrinus*, discussed; op. cit. p. 180.

†*Cacabocrinus*, vide *Dolatocrinus*.

†*Cactocrinus*, discussed; BATHER (19) p. 170, fig. xlv. *C. obesus* is from middle of Upper Burlington at White Ledge, Mo.; ROWLEY (291) p. 251. *Cainocrinus*, vide *Isocrinus*.

*Calamocrinus*, descr.; BATHER (19) p. 192, figg. xxiv, cxiii, cxiv.

†*Calathocrinus* Hall, vide *Teleocrinus*.

†*Calathocrinus* Meyer, vide *Encrinus*.

†*Calceocrinidae*, diagnosis, with diagrams of genera; BATHER (19) p. 147.

†*Calceocrinus*, incl. *Cheirocr.* Salter, *Pendulocr.*, ? *Deltacr.*; op. cit. p. 148, figg. lx, lxi. *C. barrisi*; NORTON (248) p. 451.

†*Caleidocrinus*, discussed; BATHER (19) p. 202: discussed, an early representative of *Flexibilia impinnata*, approaching the ancestor of *Ichthyocr.* and *Taxocr.* (p. 111); *C. barrandei*, probably syn. of *C. multiramus* (p. 112); *C. multiramus* (p. 111, fig. 5): BATHER (21).

†*Callawayocrinus*, vide *Dactylocrinus* Quenst.

†*Callicrinus*, incl. *Cryptodiscus*; BATHER (19) p. 164, fig. lxxvii. *C. bifurcatus*, n. sp., Niagaran, Joliet, Ill., perhaps belongs to *C. longispinus* (p. 125, pl. viii); *C. bilobus* Weller (as *Cryptodiscus*), redescri. (p. 125, pl. x); *C. cornutus*, redescri. (p. 118, pl. viii); *C. corrugatus* Weller (as *Cryptodiscus*), includes the "?????" S. A. Miller, 1892, redescri. (p. 123, pl. xi); *C. desideratus*, n. sp., Niagaran, Racine, Wis. (p. 122, pls. ix, x, xi); *C. digitatus* Weller (as *Cryptodiscus*), redescri. (p. 124, pls. ix, xi); *C. hydei* Weller (as *Cryptodiscus*), redescri. (p. 124, pls. viii, ix, x); *C. longispinus*, n. sp., Niagaran, Joliet, Ill., allied to *C. murichsonianus* (p. 119, pl. viii); *C. pentangularis*, n. sp., Niagaran, Bridgeport, Ill. (p. 120, pl. viii): WELLER (348).

†*Calocrinus*, perhaps a *Cupressocr.*; BATHER (19) p. 202.

†*Calpiocrinus*, diagnosis; op. cit. p. 189, fig. cx. *C.?* *bohemicus* Waagen & Jahn is the root of a crinoid comparable with *Lichenocr.*; BATHER (21) p. 112, fig. 6.

†*Calycanthocrinus*, origin of pararadials discussed; BATHER (19) p. 150, fig. lxii.

- +*Camarocrinus*, vide *Scyphocrinus* Zenker. *C. saffordi*; SCHUCHERT (303) p. 280.
- +*Camerata* W. & Sp. (pp. 139, 140); Order of *Monocyclica*, diagnosis and discussion (p. 159); Order of *Dicyclica*, diagnosis, divided into families, *Reteo-*, *Dimero-*, *Lamptero-*, *Rhodo-crinidae* (p. 198): BATHER (19).
- +*Campanulites*; op. cit. p. 202.
- +*Camptocrinus*; op. cit. p. 159.
- +*Canistrocrinus*, vide *Glyptocrinus*.
- +*Carabocrinidae*, diagnosis; BATHER (19) p. 172.
- +*Carabocrinus*, orals and ambulacrals; loc. cit. and figg. v, lxxxiv. *C. sp.*; WINCHELL & ULRICH (357) p. cxxiii.
- +*Carduocrinus*, vide *Lophocrinus*.
- +*Carolierinus barrandei*, apparently a large sp. of *Abacocrinus* (q.v.); BATHER (21) p. 107.
- +*Carpocrinidae*, diagnosis, genera described; BATHER (19) p. 166.
- +*Carpocrinus*, incl. *Phoenicocr.*, *Abacr.*, *Habrocr.*, *Pionocr.*, and ? *Leptocr.*, discussed; loc. cit. and fig. lxxix.
- +*Caryophyllites*, vide *Eugeniocrinus*.
- +*Cassianocrinus*, vide *Encrinus*.
- +*Castanocrinus*, vide *Melocrinus*.
- +*Castocrinus*; BATHER (19) p. 148, fig. lxi.
- +*Catillocrinidae*, diagnosis, relation to *Pisocrinidae*, description of genera; op. cit. p. 150.
- +*Catillocrinus*, incl. *Nematochr.*, discussed; loc. cit. and fig. lxiii.
- +*Cenocrinus*, vide *Isocrinus*.
- +*Centriocrinus*; BATHER (19) p. 162.
- +*Centrocrinus* Austin, vide *Platycrinus*.
- +*Centrocrinus* Worthen, ? syn. of *Gazacr.*; BATHER (19) p. 202.
- +*Ceramocrinus*, vide *Gasterocomma*.
- +*Ceriocrinus* Desor, vide *Milleriocrinus*.
- +*Ceriocrinus* White, vide *Delocrinus*.
- +*Cheirocrinus* Hall non Eichw., vide *Euchirocrinus*.
- +*Chelocrinus*, vide *Encrinus*.
- +*Chicagocrinus*, n. g. of *Eucalyptocrinidae* (p. 126), with genotype *C. ornatus*, n. sp., Bridgeport, Ill. (p. 127, pl. vii), also *C. inornatus*, Joliet, Ill. (p. 128, pl. vii), both Niagara Limestone; WELLER (348).
- +*Chladocrinus*, vide *Pentocrinus*.
- +*Cicerocrinus*, n. g. of *Pisocrinidae* [i.e. *Triacrinidae* Jaek.], with genotype *C. elegans*, n. sp., Wenlock Limest., Dudley?; SOLLAS (312) p. 267, pl. xvi, text-fig. 3: arm-branching shows it to be "the climax of the *Heterocrinidae*"; BATHER in discussion: "a link uniting the two families"; SOLLAS in added footnote, p. 270: vide etiam *Lagarocr.*
- +*Cladocrinus* Austin, vide *Taxocrinus*.
- +*Cladoidea* Jaekel; BATHER (19) p. 141.
- +*Cleioocrinus*, referred provisionally to *Flexibilia impinnata*; op. cit. p. 191.
- +*Clematocrinus*, vide *Hapalocrinus*.
- +*Clidochirus*, descr.; BATHER (19) p. 188.
- +*Clonocrinidae*, diagnosis; op. cit. p. 162.
- +*Clonocrinus* Oehl., vide *Melocrinus*.
- +*Clonocrinus* Quenst., incl. *Corymbocr.* (q.v.); BATHER (19) p. 162, fig. lxxvi.
- +*Closterocrinus*; op. cit. p. 173.
- +*Coadunata* Miller; op. cit. p. 138.
- +*Coccoocrininae*, diagnosis, discussion of genera; op. cit. p. 156.
- +*Coccoocrinus*, incl. *Amblacr.*, discussed; loc. cit.
- +*Codiocrinidae*, diagnosis; BATHER (19) p. 176.
- +*Codiocrinus*; op. cit. p. 177, fig. xciii.
- +*Codonocrinus*; op. cit. p. 202.



- +*Coeliocrinus*; BATHER (19) p. 180. *C. ventricosus*, criticism of Wachsmuth and Springer's figure showing pores; BATHER (22) p. 311.
- +*Coelocrinidae*, diagnosis, genera discussed; BATHER (19) p. 167.
- +*Coelocrinus* M. & W., incl. *Sphaerocr.* M & W., and *Aorocr.*; loc. cit. and fig. lxxxi.
- +*Coelocrinus* Salter, vide *Rhaphanocrinus*.  
*Comaster*, vide *Actinometra*.  
*Comatula*, vide *Antedon*: pars, vide *Actinometra*.  
*Comatulina*, syn. of *Antedon*; BATHER (19) p. 202.  
*Comaturella*, syn. of *Antedon*; loc. cit.
- +*Compsocrinus*; op. cit. p. 165, fig. lxxviii.
- +*Condylocrinus*, discussed; op. cit. p. 201.
- +*Conocrinus* Troost; BATHER (19) p. 202.  
*Conocrinus* d'Orb., syn. of *Rhizocr.* (q.v.); op. cit. p. 194. †*C. pyriformis* [sic] = *C. thorenti* d'Arch., distinguished from *C. suessi* = *C. thorenti* Menegh.; OPPENHEIM (251) p. 78. †*C. seguenzai*, dorsal cups descr. and measured; NOELLI (243) p. 12, pl. i.
- +*Cophinus*, its meaning; BATHER (19) p. 202.
- +*Cordylocrinus*, discussed; op. cit. p. 156. *C. plumosus* and *C. (?) ramulosus*; SCHUCHERT (303) p. 279.
- +*Coronocrinus*, vide *Hadrocrinus*.
- +*Corymbocrinus*, vide *Clonocrinus* Quenst. *C. chicagoensis*, n. sp., Niagaran, various locc. near Chicago, type from Bridgeport; WELLER (348) p. 100, pl. iv. *C. (?) macropetalus*; SCHUCHERT (303) p. 279. *C. niagarensis*, n. sp., Niagaran, Chicago; WELLER (348) p. 101, pl. iv.
- +*Cosmocrinus*; BATHER (19) p. 179.
- +*Costata* Jaekel; op. cit. p. 141.  
*Costata* Müller; op. cit. p. 138.
- +*Cotylederma*, incl. *Cotylecr.*; op. cit. p. 198.
- +*Cotyledonocrinus*, vide *Dichocrinus*.
- +*Crateriocrinus* (*Synbathocrinus*) *encerinoides* De Kon., Calceiferous sandstone, Kirkcudbright; PEACH (259) p. 65. [Is this meant for *Graphiocr. encerinoides* Kon. & Le Hon?]
- +*Cremacrinus*, vide *Euchirocrinus*. *C. sp.*; WINCHELL & ULRICH (357) p. cxxiii.
- Crinoidea*, sens. restr. Jaekel; BATHER (19) p. 141.
- +*Cromyocrinidae*, diagnosis, genera discussed; op. cit. p. 180.
- +*Cromyocrinus*; BATHER (19) p. 181, fig. c.
- +*Crotalocrinidae*, diagnosis, systematic position discussed; op. cit. p. 176.
- +*Crotalocrinus*, incl. *Anthocr.*; loc. cit. and figg. l, xcii. *C. americanus*, n. sp., Niagaran, Bridgeport, Ill.; WELLER (348) p. 143, pl. xiv. *C. pulcher*, description and drawing of a tegmen; BATHER (19) p. 176, fig. xcii.
- +*Crumenaecrinus*; op. cit. p. 202.
- +*Cryptodiscus* discussed and all spp. referred to *Callicrinus* (q.v.); WELLER (348) p. 121.
- +*Ctenocrinus*; BATHER (19) p. 161.
- +*Culicocrinus*, vide *Cylicocrinus* Müller.
- +*Cupressocrinidae*, diagnosis, genera discussed; BATHER (19) p. 177.
- +*Cupressocrinus*, incl. *Halocr.* and *Cypellocr.*, descr.; loc. cit. and fig. xciv. *C. impressus* McCoy, incl. *Poteriocr. maccoyanus*; PEACH (260) p. 222: [this is usually referred to *Hydreionocr.*]
- +*Cupulocrinus*, discussed; BATHER (19) p. 202.
- +*Cyathidium*, incl. *Micropocr.*; op. cit. p. 198.
- +*Cyathocrinidae*, diagnosis, genera described; op. cit. p. 173.
- +*Cyathocrinoidea*, Sub-order, diagnosis, division into Families *Carabo-*, *Palaeo-*, *Euspiro-*, *Sphaero-*, *Cyatho-*, *Petalo-*, *Crotalo-*, *Codia-*, *Cupresso-crinidae*, and *Gasterocomidae*; op. cit. p. 172 et sqq.

- +*Cyathocrinus*, redescri.; BATHER (19) p. 173, ff. xxvi, xxxix, xliii, lxxxix. *C. capillaris* Phill. is *Gissocr.*; BATHER in Review of WELLER (348). *C. cora*, redescri.; WELLER (348) p. 62, pl. xiv: description of arms does not agree with drawings; BATHER in Review. *C. multibrachiatus*, original drawing; BATHER (19) p. 174, fig. lxxxix. *C. ornatissimus* Hall, probably *Mariacr.*; WHITFIELD & HOVEY (351) p. 197. *C. ramosus*, a figure of Angelin's copied; WELLER (348) fig. 14: the specimen is *C. longimanus*; BATHER in Review. *C. cf. ramosus* Schloth., columnals, cirri, compared with *C. kattaensis* [of course not a *Cyathocrinus*]; FRECH (124) p. 285. *C. turbinatus*, n. sp., Niagaran, Chicago; WELLER (348) p. 65, pl. xiv. *C. vanhornei*, redescri., abnormal anal; op. cit. p. 64, pl. xiv. *C. cf. virgalensis*, columnals; FRECH (124) p. 285.
- +*Cyclocrinus* [i.e. *Acrochordocr.* q.v.] sp. ?; LISSAJOUS (195) p. 17. *C. sp.*; STRUEBIN (324) pp. 335, 337. *C. sp.*; KILIAN & LORY (170) p. 52. *C. areolatus*; LISSAJOUS (195) p. 17. *C. macrocephalus*; KOBAYASHI (177) p. 196: columnals, some curiously tapering, one bored by *Saxicava*; LISSAJOUS (195) p. 16, pl. iii. *C. rugosus*; op. cit. p. 16.
- +*Cylicocrinus* Müller non Müller, vide *Barrandeocrinus*.
- +*Cylicocrinus* Müller (seu *Culicocrinus*), discussed; BATHER (19) p. 156.
- +*Cypellocrinus*, vide *Cupressocrinus*.
- +*Cyphocrinus*, incl. *Hyptiocr.*; BATHER (19) p. 199: WELLER (348) p. 76. *C. chicagoensis*, n. sp., Niagaran, Bridgeport, Ill.; loc. cit. pl. i.
- +*Cupressocrinus* = *Cupressocrinus*; BATHER (19) p. 202.
- +*Cyrtidocrinus*; op. cit. p. 188.
- +*Cyrtocrinus*, vide *Torynocrinus*.
- +*Cystocrinus*; BATHER (19) p. 202, fig. i.
- +*Cytocrinus*, vide *Melocrinus*.
- +*Dactylocrinidae*, diagnosis; BATHER (19) p. 189.
- +*Dactylocrinus* Slad., vide *Scytalecrinus*.
- +*Dactylocrinus* Quenst., incl. ? *Aristocr.* seu *Callawaycr.*, diagnosis; BATHER (19) p. 189, fig. cx.
- +*Dadocrinus*; op. cit. p. 182.
- +*Daemonocrinus*; op. cit. p. 202.
- Decacnemus*, syn. of *Antedon*; loc. cit.
- +*Decadactylocrinus*; loc. cit.
- +*Decadocrinus*; BATHER (19) p. 180. *D. grandis*, pores in anal sac; SPRINGER (314) p. 144, pl. xvi. *D. tumidulus* M. & G., incl. *D. grandis* W. & Sp. pars, pores in anal tube; op. cit. p. 139, pl. xvi.
- Decameros*, syn. of *Antedon*; BATHER (19) p. 202.
- +*Delocrinus*, incl. *Ceriocr.* White; op. cit. p. 180, fig. c. *C. craigi*, redescri., measurements; BEEDE (29) p. 32, pl. vi. *C. hemisphericus*, type at Washburn Coll.; op. cit. p. 34, pl. vi. *C. missouriensis*, incl. *C. hemisphericus* Mill. & Gurl. non Shum., redescri., measurements; op. cit. p. 35, pl. vi. *C. ? monticulatus*, redescri., measurements; op. cit. p. 33, pl. vii.
- +*Deltacrinus*, vide *Calceocrinus*.
- +*Dendrocrinidae*, diagnosis; BATHER (19) p. 178.
- Dendrocrinoidea*, Sub-order, diagnosis, divided into Families *Dendro-*, *Botryo-*, *Lopho-*, *Scaphio-*, *Scytale-*, *Graphio-*, *Cromyo-*, and *Encrinidae*, which constitute Grade *Distincta*, and *Pentacrinidae*, *Uintacrinidae*, *Marsupitidae*, and *Bathycrinidae*, which constitute Grade *Articulata*; BATHER (19) p. 178 et sqq.
- +*Dendrocrinus*; op. cit. p. 179, figg. xxvi, xcvi. *D. sp.*; WINCHELL & ULRICH (357) p. cxxiii. *D. cambriensis*, allied to *Iocr.*; BATHER (19) p. 146.
- +*Desmidocrinus*; op. cit. p. 166.
- +*Diabolocrinus*; op. cit. p. 200.

- †*Diamenocrinus*; BATHER (19) p. 200.
- †*Dichocrinus*, incl. *Cotyledonocrinus*; op. cit. p. 159.
- Dicyclica*, Sub-class, diagnosis, and classification under Orders *Inadunata*, *Flexibilia*, and *Camerata*; op. cit. p. 171 et sqq.
- †*Dimerocrinidae*, diagnosis; BATHER (19) p. 198.
- †*Dimerocrinus*, incl. *Glyptaster*, *Thysanocr.*, and *Eucr.*; loc. cit. fig. cxxiii.
- D. decadactylus*, original drawing; op. cit. p. 199, fig. cxxiii.
- †*Dimorphocrinus*, syn. of *Orophocrinus*, vide IV, H; op. cit. p. 202.
- †*Distincta*, Grade of *Dendrocrinoidea*; op. cit. p. 178.
- †*Dizygocrinus*; BATHER (19) p. 168.
- †*Dolatocrinidae*, diagnosis; op. cit. p. 164.
- †*Dolatocrinus*, incl. *Cacabocr.*; loc. cit. fig. xlv.
- †*Dolichocrinus*, incl. *Tetanocr.*, discussed; op. cit. p. 197.
- †*Doliolocrinus*; BATHER (19) p. 202.
- †*Donacocrinus*; loc. cit.
- †*Dorycrinus*, discussed; op. cit. p. 167. *D. gouldi*, specimen figured by Keyes, Missouri Geol. Surv. iv, pl. xxiii, fig. 1, is *D. mississippiensis*; ROWLEY (290) p. 271. *D. missouriensis*, v. sub *Eretmocrinus nodosus*. *D. pentalobus*, n. sp., base of Upper Burlington Limest., Louisiana, Mo., and White Ledge, Mo.; ROWLEY (289) p. 72, pl. ii.
- †*Echinocrinus* = *Archaeocidaris*, vide IV, C; BATHER (19) p. 202.
- †*Ectenocrinus*, discussed; op. cit. p. 146, fig. lviii.
- †*Edriocrinus*, referred provisionally to *Flexibilia impinnata*; op. cit. p. 191, fig. cxii. *E. becraftensis*, n. sp., Oriskany beds of Becraft Mt., N. Y., calyces; CLARKE (67) p. 62, pl. ix. *E. pocilliformis*; SCHUCHERT (303) p. 279. *E. sacculus*; op. cit. pp. 292, 313; WELLER (349) p. 43.
- †*Edwardsocrinus*, vide *Platycrinus*.
- †*Emperocrinus*, discussed; BATHER (19) p. 202: possible syn. of *Archaeocr.*; WELLER (348) p. 89.
- †*Enallocrinus*; BATHER (19) p. 176, fig. xcii.
- †*Encrinidae*, diagnosis; op. cit. p. 181.
- †*Encrinus*; op. cit. p. 202.
- †*Encrinus*, incl. *Chelocr.*, ?*Calathocr.*, *Flabellocr.*, ?*Cassianocr.*, ?*Traumatocr.*, *Porocr.* Dittm.; op. cit. p. 182. *E. cassianus*; BROILI (48) p. 369; O. GORDON (132) p. 340, and (249) p. 309; KOSSMAT (184) p. 95; ZITTEL (368) p. 349. *E. granulatus*; BROILI (48) p. 369; O. GORDON (132) p. 340 and (249) p. 309; MARIANI (223) p. 1254; ZITTEL (368) p. 349. *E. liliiformis*, reconstruction of Muschelkalk sea-floor, showing 3 individuals of this as in life (fig. 2 on p. 17), with popular description of the species (p. 20); FRAAS (123). *E. liliiformis*?; DOUVILLE (94) p. 595. *E. cf. liliiformis*, fine for size and preservation; GEYER (126) p. 120. *E. cf. liliiformis*, Beyrich from Timor, 1864, perhaps same genus as *Cyathocr. virgalensis* [which is probably not a *Cyathocrinoid* at all]; FRECH (124) p. 285. *E. silesiacus* Quenst., discussed; KOKEN (182) p. 213. *E. varians*; BROILI (48) p. 369; O. GORDON (132) p. 340, and (249) p. 309; ZITTEL (368) p. 349.
- †*Entrochus*; BATHER (19) p. 202. *E. rotiformis*, n. sp., Trias of Kweitschou, China, columnals only; KOKEN (182) p. 212, pl. x.
- †*Epatocrinus*, vide *Gasterocoma*.
- †*Eretmocrinus*; BATHER (19) p. 167. *E. expansus* Keyes, is a *Cactocrinus*; ROWLEY (291) p. 251. *E. nodosus*, n. sp., base of Upper Burlington Limest., Louisiana, Mo., incl. specimen figd. as *Dorycrinus missouriensis* by Wachsmuth & Springer, Revision Palaeocrin. iii, pl. iv, fig. 5; ROWLEY (289) p. 73, pl. ii.
- †*Erisocrinus*; BATHER (19) p. 181, fig. c. *E. megalobranchius*, redescr., measurements; BEEDE (29) p. 37, pl. vii. *E. typus*, variations from type in a specimen at Washburn College; op. cit. p. 39, pl. vi.

- +*Eucalyptocrinidae*, diagnosis, genera described; BATHER (19) p. 163.
- +*Eucalyptocrinus*, incl. *Hypanthocrinus*, endothecal laminae not hydrospires; op. cit. p. 164. *E. asper*, n. sp., Niagaran, Bridgeport and Hawthorn, Ill., allied to *E. elrodi* and distinguished from *E. caelatus*; WELLER (348) p. 110, pl. v. *E. caelatus*; WILLIAMS (352) p. 36. *E. cornutus*; NORTON (248) p. 438. *E. crassus*, redescri., incl. *E. chicagensis* Winch. & Mar., and *E. constrictus* Hall; WELLER (348) p. 105, pl. v. *E. depressus*, redescri.; op. cit. p. 114, pl. vii. *E. egani*, redescri.; op. cit. p. 108, pl. vii. *E. inornatus*, n. sp., Niagaran, Bridgeport and Hawthorn, Ill.; op. cit. p. 115, pl. vi. *E. magnus*? or perhaps a large *E. asper*, descr.; op. cit. p. 116, pl. vi. *E. nodulosus*, n. sp., Niagaran, Bridgeport, Ill., perhaps incl. some specimens referred by Hall to *E. crassus*; op. cit. p. 109, pl. vii. *E. obconicus*, redescri.; loc. cit. pl. vii. *E. ornatus*, redescri.; op. cit. p. 111, pl. vi. *E. rotundus*, redescri., probably young of another sp.; op. cit. p. 113, pl. v. *E. turbinatus*, redescri.; op. cit. p. 107, pl. vi.
- +*Euchirocrinus*; incl. *Cheirocr.* Hall, *Cremacr.* (q.v.), and *Proclivocr.*; BATHER (19) p. 148, fig. lxi.
- +*Eucladocrinus*, evolution of; op. cit. p. 158, fig. lxxi.
- +*Eucrinoidea* Zittel; op. cit. p. 139.
- +*Eucrinus*, vide *Dimerocrinus*.
- +*Eudesicrinidae*, diagnosis, doubtfully referred to *Flexibilia pinnata*; BATHER (19) p. 198.
- +*Eudesicrinus*; loc. cit.
- +*Eudiocrinus*, incl. *Ophiocr.* Semper; op. cit. p. 195. *E. sp.* nondescr., 1289 metres, Somali coast; CHUN (63) p. 488. *E. indivisus*; PFEFFER (267).
- +*Eugeniocrinidae*, diagnosis, genera descr.; BATHER (19) p. 197.
- +*Eugeniocrinus*, incl. *Symphytocrinus*, *Caryophyllites*, descr.; loc. cit. and fig. cxx. *E. sp.* (pp. 15, 33), *E. (Hemicr.) astieri* (pp. 47, 52); KILIAN & LORY (170). *E. caryophyllatus*; LISSAJOUS (195) p. 2. *E. (Hemicr.) gevreyi*; KILIAN & LORY (170) p. 52. *E. hagenowi*; DEECKE (82) pp. 55, 71. *E. heberti*; KILIAN & LORY (170) p. 33. *E. hoferi*; LISSAJOUS (195) p. 2. *E. moussoni*; HUENE (166) p. 356; LISSAJOUS (195) p. 2.
- +*Eupachycrinus*; BATHER (19) p. 181, fig. c. *E. magister*; BEEDE (29) p. 40, pl. vi. *E. tuberculatus*? = n. sp.? GIRTY (130) pp. 542, 575.
- +*Euryalecrinus*, vide *Taxocrinus*.
- +*Euryocrinus*; BATHER (19) p. 190.
- +*Euspirocrinidae*, diagnosis; op. cit. p. 173.
- +*Euspirocrinus*; loc. cit. and figg. xxxviii, lxxxvii.
- +*Eutrochocrinus*; BATHER (19) p. 167.
- +*Extracrinus*, vide *Pentacrinus*.
- +*Fistulata* of W. & Sp. (p. 139), of Jaekel (p. 141); BATHER (19).
- +*Flabellocrinus*, vide *Encrinus*.
- +*Flexibilia* Zittel; BATHER (19) p. 140: Order of *Dicyclica*, diagnosis, divided into two Grades, *Impinnata* and *Pinnata*; op. cit. p. 187.
- +*Forbesiocrinus* Ang., vide *Lithocrinus*.
- +*Forbesiocrinus* de Kon. non W. & Sp., vide *Taxocrinus*. *F. agassizi*, either *Sagenocr.* or new genus of *Sagenocrinidae*; BATHER (19) p. 190.
- +*Gammarocrinus*, incl. *Sclerocrinus*; op. cit. p. 197.
- +*Ganymeda*, syn. of *Antedon*; op. cit. p. 203.
- +*Gasterocomma*, incl. *Epactocr.* and *Ceramocr.*; op. cit. p. 177.
- +*Gasterocomidae*, diagnosis; loc. cit.
- +*Gastrocrinus*; BATHER (19) p. 179, fig. xvii.
- +*Gaurocrinus*; op. cit. p. 203.
- +*Gazacrinidae*, diagnosis as Fam. of *Flexibilia Impinnata*; op. cit. p. 188.
- +*Gazacrinus*, name preferred to *Idiocrinus*; WELLER (348) p. 78: incl.



- Idiocr.*, placed doubtfully among *Flexibilia Impinnata*; BATHER (19) p. 188, fig. cix [this fig. quite possibly misinterprets the original drawings, which are obscure]. *G. major*, n. sp., Niagaran, Hawthorn, Ill.; WELLER (348) p. 78, pl. iii. *G. minor*, n. sp., Niagaran, Bridgeport, Ill.; op. cit. p. 80, pl. iii.
- +*Gennaeocrinus*, descr.; BATHER (19) p. 169.
- +*Geocoma* Fraas, vide *Antedon*.
- +*Geocrinus*, vide *Periechocrinus*.
- +*Gilbertsocrinus*, incl. *Ollacr.*, *Goniasteroidocr.*, and *Trematocr.*; BATHER (19) p. 201, fig. cxxvii.
- +*Gissocrinus*, descr.; op. cit. p. 175, figg. viii, ix, xli, xc.
- +*Glenotremites*, syn. of *Antedon*; op. cit. p. 203.
- +*Glyptaster*, vide *Dimerocrinus*.
- +*Glyptocrinidae*, diagnosis; BATHER (19) p. 160.
- +*Glyptocrinus*, incl. *Canistrocr.* and *Pycnocr.*; op. cit. p. 161, fig. xxv. *G.* sp.; WINCHELL & ULRICH (357) p. cxxiii. *G. basalis*; MALAISE (218) p. 806, and (219) p. 205. *G. plumosus*; FOERSTE (112) p. 72 (see III, B, iv, g).
- +*Gnathocrinus fusiformis*, syn. of *Millericrinus pratti*; BATHER (19) p. 203.
- +*Gnorimocrinus*, redescri.; op. cit. p. 189.
- Goldfussia* Norman; op. cit. p. 203.
- +*Goniasteroidocrinus*, vide *Gilbertsocrinus*.
- +*Goniocrinus*; BATHER (19) p. 179.
- +*Gothocrinus*; loc. cit.: armlets perhaps branch; JAEKEL (167) p. 373.
- +*Grammocrinus*; BATHER (19) p. 203.
- +*Graphiocrinidae*, diagnosis; op. cit. p. 180.
- +*Graphiocrinus*; loc. cit. and fig. c: vide etiam *Crateriocrinus*.
- +*Guettardicrinus*; BATHER (19) p. 192.
- +*Gymnocrinus*; op. cit. p. 197.
- +*Habrocrinus*, vide *Carpocrinus*.
- +*Hadrocrinus*, incl. ? *Coronocrinus*, fusion of primibrachs; BATHER (19) p. 164. *H. polydactylus*; SCHUCHERT (303) p. 280.
- +*Halocrinus*, vide *Cupressocrinus*.
- +*Halophenix*, syn. of *Pentacrinus*; BATHER (19) p. 203.
- +*Hapalocrinus*, incl. *Agriocr.*, *Thallocr.*, *Clematocr.*, redescri.; op. cit. p. 156, fig. lxix.
- +*Haplocrinidae*, diagnosis; op. cit. p. 151.
- +*Haplocrinus* (seu *Aplocr.*), analysis, anal pore; op. cit. pp. 126, 151, fig. lxiv.
- +*Harmocrinus*, vide *Stelidiocrinus*.
- +*Helmintholithus entrochus*; BATHER (19) p. 203. *H. portentosus*, syn. of *Pentacrinus*; loc. cit.
- +*Hemicrinus*, vide *Torynocrinus*: spp. etiam sub *Eugeniocr.*
- +*Herpeticrinus*, incl. *Óphiocr.* Charlesw., *Myelodactylus* Ang. & ?Hall, and *Brachioocr.* Hall, redescri.; BATHER (19) p. 146, fig. lix: stem sharply pentagonal; ZITTEL & EASTMAN (369) p. 153: certainly not; BATHER in Review. *H. nodosarius*; SCHUCHERT (303) p. 279. Vide etiam *Myelodactylus*.
- Hertha*, syn. of *Antedon*; BATHER (19) p. 203.
- +*Heterocrinidae*, diagnosis, and description of genera; op. cit. p. 145.
- +*Heterocrinus*, incl. *Stenocr.*, discussed; op. cit. p. 146, fig. lviii.
- +*Hexacrinidae*, diagnosis; op. cit. p. 158.
- +*Hexacrinus*; loc. cit. and fig. lxxii.
- Hibernula*, vide *Antedon*.
- +*Holocrinus*; BATHER (19) p. 182.
- +*Holopodidae*, diagnosis; op. cit. p. 197.
- Holopus*; loc. cit. and figg. xxxiv, cxxi.
- +*Homalocrinus*, diagnosis; op. cit. p. 189.

- +*Homocrinus*; BATHER (19) p. 179, fig. xcvi. *H. proboscoidalis* [sic]; SCHUCHERT (303) pp. 292, 313. *H. scoparius*; op. cit. p. 279.
- +*Hoplocrinus*, incl. *Baerocr.*; BATHER (19) p. 145, fig. lvii.
- +*Hybocrinidae*, diagnosis; BATHER (19) p. 145.
- +*Hybocrinus*, incl. *Indianocr.*; loc. cit. and figg. vi, xxxvi, lvii.
- +*Hybocystis*, redescri., relations to *Crinoidea*, referred to *Hybocrinidae*; op. cit. pp. 95, 145, fig. i.
- +*Hydreionocrinus*; op. cit. p. 180. *H. sp.*; PEACH (260) p. 223. *H. globularis*; loc. cit. *H. impressus*, vide sub *Cupressocrinus*. *H. kansasensis* (p. 42), *H. subsinuatus* (p. 43); BEEDE (29) pl. vii.
- +*Hydriocrinus*, vide *Scaphiocrinus*.
- Hyocrinidae*, description based on *Hyocrinus bethellianus*, which is discussed; BATHER (19) p. 153, fig. lxvii.
- Hyocrinus* sp. nondescr., 4636 metres, Antarctic, about 60° E., 65° S., text-fig.; CHUN (63) pp. 226, 486.
- +*Hypanthocrinus*, vide *Eucalyptocrinus*.
- +*Hyperocrinus* (seu *Uperocrinus*), incl. *Lobocr.*; BATHER (19) p. 168.
- +*Hypocrinus*; op. cit. p. 178.
- Hyponome*, vide *Antedon*.
- +*Hyptiocrinus*, vide *Cyphocrinus*.
- +*Hystricrinus*, vide *Arthracantha*.
- +*Ichthyocrinidae*, diagnosis, genera discussed; BATHER (19) p. 187.
- +*Ichthyocrinus*; op. cit. p. 188, fig. cviii. *I. bohemicus*; BATHER (21) p. 114. *I. laevis*; WILLIAMS (352) p. 36. *I. subangularis*, redescri., incl. *I. corbis* Winch. & Mar., and S. A. Miller; WELLER (348) p. 146, pl. xv.
- +*Iconidactylocrinus*; BATHER (19) p. 203.
- +*Idiocrinus*, vide *Gazacrinus*.
- Ilycrinus*, vide *Bathycrinus*.
- +*Impinnata* P. H. Carp. (p. 140); as Grade of *Flexibilia*, diagnosis, division into Families *Ichthyo-*, *Gaza-*, *Taxo-*, *Dactylo-*, and *Sagenocrinidae* (p. 187 et sqq.): BATHER (19).
- Inadunata* W. & Sp. (p. 139), as Order of *Monocyclica*, diagnosis and discussion (p. 144), as Order of *Dicyclica*, diagnosis, relations of Families, divided into Sub-orders *Cyathocrinoidea* and *Dendrocrinoidea* (p. 171 et sqq.): BATHER (19).
- Inarticulata* Miller; BATHER (19) p. 138.
- +*Indianocrinus*, vide *Hybocrinus*.
- +*Iocrinus*, redescri.; BATHER (19) p. 145, figg. xxvi, xxviii, lviii.
- +*Irregularia* Carpenter & Etheridge; op. cit. p. 139.
- Isis*, vide *Isocrinus* Meyer.
- +*Isocrinus* Phill., vide *Taxocrinus*.
- Isocrinus* Meyer, incl. *Isis* pars, *Cainocr.*, *Picteticr.*, *Cenocr.*, *Neocr.*, and *Pentacr.* pars, descr.; BATHER (19) p. 182, figg. xi, xvi, xvii, xxiii, ci, cii: for spp. vide sub *Pentacr.*
- Kallispongia*, larva of *Antedon*; op. cit. p. 203.
- +*Koninkocrinus*, syn. of *Torynocr.* and *Acrochordocr.*; loc. cit.
- +*Lagacrocrinus* [syn. of *Cicerocr.* q.v.], n. g. of *Triacrinidae* with genotype *L. osiliensis*, n. sp., Upper Oesel beds, Oesel, co-types at St Petersburg Academy (p. 486 and text-fig. 1, 2), *L. anglicus*, n. sp., Lower Ludlow beds, Presteign, Radnorshire, S. Wales, holotype in Mus. f. Naturkunde, Berlin (p. 486, no fig.), *L. scanicus*, n. sp., Beyrichia Limestone, Scania, Sweden, holotype in Riksmuseum, Stockholm (p. 486, figg. 3, 4, 6, 7), *L. tenuis*, n. sp., Upper Ludlow beds, Ludlow, holotype in Brit. Mus. (p. 487, no fig.); JAEKEL (168).
- +*Lahusenocrinus*, discussed; BATHER (19) p. 200.
- +*Lampterocrinidae*, diagnosis, genera discussed; op. cit. p. 199.
- +*Lampterocrinus*, descr.; op. cit. p. 199, fig. cxxiv. *L. ? dubius*, n. sp., Niagaran, Lemont and Joliet, Ill., perhaps n. g. because arms un-

- branched; WELLER (348) p. 84, pl. ii: but arms not preserved; BATHER in Review. *L. inflatus*, redescrib., large specimen figd. (p. 81, pl. ii); *L. robustus*, n. sp., Niagaran, Romeo, Lemont, and Joliet, Ill. (p. 82, pl. ii); *L. ? subglobosus*, n. sp., Niagaran, Bridgeport and Hawthorn, Ill. (p. 83, pl. iii): WELLER (348).
- †*Larvata* Jaekel; BATHER (19) p. 141.
- †*Larviformia* W. & Sp.; op. cit. pp. 139, 140.
- †*Laubeocrinus*, systematic position; op. cit. p. 170. *L. barrandei*, structure discussed, referred to *Monocylica Camerata*, compared with the abnormality of *Phillipsocr.*; BATHER (21) p. 108, fig. 3.
- †*Lecanocrinus*; BATHER (19) p. 188. *L.* sp.; WELLER (349) p. 33. *L. waukoma* Hall (as *Cyathocr.*) redescrib., incl. *L. pusillus* Winch. & Mar. non Hall; WELLER (348) p. 148, pl. xv.
- †*Lecythocrinus*; BATHER (19) p. 177.
- †*Lecythocrinus*; op. cit. p. 175.
- †*Leptocrinus*, vide *Carpocrinus*.
- †*Lithocrinus*, incl. *Forbesioc.* Ang., diagnosis; BATHER (19) p. 189, fig. cx.
- †*Lobocrinus*, vide *Hyperocrinus*. *L. aequibrachiatus*, v. sub *Batocr. rotadentatus*; ROWLEY (290).
- †*Lobolithus*, vide *Scyphocrinus* Zenker.
- †*Lophocrinidae*, diagnosis; BATHER (19) p. 179.
- †*Lophocrinus*, incl. ? *Carduocrinus*; loc. cit.
- †*Lyriocrinus*, incl. *Marsupioc.* Hall; BATHER (19) p. 200. *L. melissa*, redescrib.; WELLER (348) p. 91, pl. iii. *L.* cf. *melissa*; WILLIAMS (352) p. 55.
- †*Macarocrinus*; BATHER (19) p. 166, fig. lxxix.
- †*Macrocrinus*; op. cit. p. 168.
- †*Macrostylocrinus*; op. cit. p. 162. *M. obconicus*, n. sp., Bridgeport, Ill. (p. 95, pl. iv); *M. semiradiatus* Hall (as *Saccocr.*) redescrib., perhaps incl. *M. fasciatus* Hall (p. 94, pl. iv); *M. striatus*, redescrib. from Chicago area, more slender than original Indiana specimens, those from Racine figd. by Hall are not this sp. (p. 93, pl. iv); *M. subglobosus*, n. sp., Bridgeport, Ill. (p. 96, pl. iv): all Niagaran; WELLER (348).
- †“*Majesticrinus*” [nom. nud. or ? err. pro *Megistocrinus*], Burlington, Iowa; ORCUTT (252).
- †*Mariocrinus*, incl. *Zenkericrinus*; BATHER (19) p. 161, fig. lxxiv. *M. melocrinoides*, vide sub *Zenkericr.* *M. obpyramidalis*, vide sub *Melocrinus*. *M. plumosus*, *M. ramosus* and *M. stoloniferus*; SCHUCHERT (303) p. 279.
- †*Marsipocrininae*, diagnosis; BATHER (19) p. 156.
- †*Marsipocrinus*, name preferred to *Marsupioc.* Phill. non Blainv., incl. *Cypellocr.* vel *Cupellaecr.* Shum. non Steininger, discussed; loc. cit. and fig. lxx. *M. chicagocensis*, n. sp., Niagaran, Chicago; WELLER (348) p. 138, pl. xiv. *M. tentaculatus*; SCHUCHERT (303) p. 279.
- †*Marsupiocrinus* Blainv., vide *Marsupites*.
- †*Marsupiocrinus* Phill., vide *Marsipocr.*
- †*Marsupiocrinus* Hall, vide *Lyriocrinus*.
- †*Marsupites*, incl. *Sitularia* and *Marsupioc.* Blainv.; BATHER (19) p. 185, figg. xvii, civ. *M. ornatus*; SCHLUETER (297) pp. 418, 420. *M. testudinarius*; SHEPPARD (305) p. 67: as zonal fossil; ROWE (288) pp. 296, 301, 333, 348.
- †*Marsupitidae*, diagnosis; BATHER (19) p. 184.
- †*Mastigocrinus*; op. cit. p. 179, fig. xlviii.
- †*Medusacrinus* Austin [syn. of *Platyocr.*]; op. cit. p. 203.
- †*Megistocrinus*, describ.; op. cit. p. 168, fig. xlii. *M. nodosus*; NORTON (248) p. 451. Vide etiam *Majesticr.*
- †*Melocrinidae*, diagnosis; BATHER (19) p. 161.

- †*Melocrinoidea*, Sub-order, diagnosis, divided into families *Glyptocrinidae*, *Melocrinidae*, *Patelliocrinidae*, *Clonocrinidae*, *Eucalyptocrinidae*, and *Dolatoocrinidae*; BATHER (19) p. 160.
- †*Melocrinus*, incl. *Astrocr.* *Coubr.*, *Turbinocr.*, *Castanocr.*, *Cytocr.*, and *Clonocr.* Oehl., relations to *Mariacr.*; op. cit. p. 161, fig. lxxiv. *M. nobilissimus*; SCHUCHERT (303) p. 279. *M. obpyramidalis*, redescri.; WELLER (348) p. 97, pl. iii: evidence of fixed brachials suggests it is *Mariacr.*; BATHER in Review. *M. pachydactylus*, and *M. paucidactylus*; SCHUCHERT (303) p. 279. *M. verneuili*, vide *Thysanocr. pentangularis*.
- †*Merocrinus*; BATHER (19) p. 178, fig. xcvi. *M. sp.*; WINCHELL & ULRICH (357) p. cxxiii.
- †*Mesocrinus*, descr.; BATHER (19) p. 194.
- †*Mespilocrinus* Kon.; op. cit. p. 188.
- †*Mespilocrinus* Quenst.; vide *Acrochordocr.*
- Metacrinus*; BATHER (19) p. 183, fig. ci. *M. sp.* nondescr., Nias Channel; CHUN (63) p. 362.
- Microcrinus*, syn. of *Atelecrinus*; BATHER (19) p. 203.
- †*Micropocrinus*, vide *Cyathidium*.
- †*Millericrinus*, incl. *Cerocr.* Desor and *Pomatocr.*, descr.; BATHER (19) p. 191, figg. xvii, lii. *M. sp.*; KILIAN & LORY (170) pp. 33, 37. *M. sp.* indet., stem-fragments; also a root of another (p. 15, pl. iii); *M. sp.* indet., Kimmeridgian (p. 16); *M. affinis*, variations from type (p. 12); LISSAJOUS (195). *M. alternatus*, vide *M. dudressieri*. *M. beaudouini*, vide *M. rotiformis*. *M. caraboeufi*?, descr., differences from type perhaps due to greater age (p. 6, pl. i); *M. cf. charpyi* (p. 12); *M. convexus* (p. 10); *M. dilatatus*?, a radial (p. 13); *M. dudressieri*, discussed, probably restr. to specimens from Lower Rauracian, perhaps = *M. alternatus* (p. 10, pl. ii): LISSAJOUS (195). *M. echinatus*; KOPY (177) p. 209. *M. cf. elatus*, stem-fragments (p. 15, pl. iii); *M. escheri*, columnals figd., ? 2 spp. (p. 11, pl. ii); *M. etalloni* (p. 12); *M. goupilianus* (p. 8): LISSAJOUS (195). *M. granulatus*; KOPY (177) p. 196: LISSAJOUS (195) p. 5. *M. cf. granulatus*, stem-fragments descr.; loc. cit. and pl. i. *M. horridus*; KOPY (177) p. 209: LISSAJOUS (195) p. 11. *M. knorri*, discussed, probably restr. to specimens of Birmensdorf age (pp. 9, 10, pl. ii); *M. nodotianus* (p. 12); *M. perrauti*, n. sp., allied to *M. belnensis*, Lower Rauracian of Lacroix near Tournus (p. 13, pl. iii); *M. pilleti*, root figd. (p. 7, pl. i): LISSAJOUS (195). *M. pratti*, incl. *Gnathocr. fusiformis*; BATHER (19) p. 203. *M. regularis* (p. 11); *M. rotiformis*, also a specimen apparently identical with *M. beaudouini*, which may therefore be a syn. of this sp. (p. 8, pl. i); *M. thiollierei*, the types are not Oxfordian but from zone of *Cidaris florigemma* (p. 11): LISSAJOUS (195).
- †*Missouricrinus*, doubtfully referred to *Belemnocrinidae*; BATHER (19) p. 153.
- †*Mitocrinus*, discussed; op. cit. p. 203.
- Monocyclica*, Sub-class, diagnosis, and classification under Orders *Inadunata*, *Adunata*, and *Camerata*; op. cit. p. 144 et sqq.
- †*Mycocrinus*, redescri.; op. cit. p. 150, fig. lxii.
- †*Myelodactylus*, name preferred to *Herpetocrinus* (q. v.), and *M. bridgeportensis*, redescri.; WELLER (348) p. 69, pl. xv.
- †*Myrtillocrinus*, incl. *Ancyrocrinus*; BATHER (19) p. 177, fig. li.
- †*Nanocrinus*; op. cit. p. 177.
- †*Nematoocrinus*, vide *Catillocrinus*.
- Neocrinoidea* Wachsmuth; BATHER (19) p. 139.
- Neocrinus*, vide *Isocrinus*.
- †*Nipterocrinus*, referred to *Ichthyocrinidae*; BATHER (19) p. 188.
- †*Ohioocrinus*, discussed; op. cit. p. 146.



- †*Ollacrinus*, vide *Gilbertocrinus*.  
 †*Oncocrinus*, vide *Pycnosaccus*.  
 †*Onychocrinus*, descr., arm-branching; BATHER (19) p. 190, figg. xvii, cx.  
 †*Ophiocrinus* Ang., vide *Streptocrinus*.  
 †*Ophiocrinus* Charlesworth, vide *Herpetocrinus*.  
 †*Ophiocrinus* Salter; BATHER (19) p. 201.  
     *Ophiocrinus* Semper, vide *Eudiocrinus*.  
 †*Orthocrinus*; BATHER (19) p. 198.  
 †*Ottawacrinus*; op. cit. p. 178, fig. xcvi.  
 †*Pachyantedon*; op. cit. p. 203.  
 †*Pachycrinus*; loc. cit.  
 †*Pachylocrinus*, vide *Woodocrinus*. *P.* sp.; JAEKEL in FRECH (124) p. 204, fig. 45 [This name is syn. of *Woodocr.*, but the drawing is not like spp. of that genus.]  
 †*Pachycrinus*; BATHER (19) p. 203.  
 †*Palaeocrinidae*, diagnosis, genera descr.; op. cit. p. 172.  
 †*Palaeocrinoidea* Wachsmuth; op. cit. p. 139.  
 †*Palaeocrinus*, redescri.; op. cit. p. 172, fig. lxxxv. *P.* sp.; WINCHELL & ULRICH (357) p. cxxiii.  
 †*Parisocrinus*; BATHER (19) p. 173, fig. xxvi. *P. subramosus*, Miller & Gurley [sub *Poteriocr.*], pores in anal sac; SPRINGER (314) p. 145, pl. xvi: difficulty of regarding this as *Parisocr.*; BATHER (22) p. 307.  
 †*Patelliocrinidae*, diagnosis, relations discussed; BATHER (19) p. 161.  
 †*Patelliocrinus*; op. cit. p. 162, fig. lxxv.  
 †*Pendulocrinus*, vide *Calceocrinus*.  
*Pentacrinidae*, diagnosis, genera discussed; BATHER (19) p. 182.  
*Pentacrininae*, diagnosis, genera discussed; loc. cit.  
*Pentacrinus* Auctt. non Blumenbach, vide *Isocrinus*. †*Pentacr.* s. str., incl. *Polycerus*, *Extracr.*, ? *Chladocr.*, descr.; BATHER (19) p. 182 fig. ci.  
 †*Extracr.* [i.e. *Pentacr.*] sp. ? columnals; LISSAJOUS (195) p. 24. †*P.* sp. columnals (? *Balanocr.* or *Extracr.*) from Laila Mts.; BONNEY (43) p. 226. †*P.* [?= *I.*] sp.; CARTER (57). †*P.* [?= *I.*] sp.; KILIAN & LORY (170) pp. 51, 56. †*P.* [?= *I.*] sp.; STILLE (319) pp. 8, 10, 12. †*P.* [?= *I.*] sp.; UHLIG (334) p. 9. *P.* [i.e. *I.*] sp. as zonal fossil; ROWE (288) pp. 313, 317. *P.* [i.e. *I.*] sp. nondescr., 750 and 1280 metres, Siberut Strait, L. DOEDERLEIN photo. but no description; CHUN (63) pp. 364, 486. *P.* [i.e. *I.*] *agassizi*; BRYDONE (51) p. 12: incl. *P. kloedeni* as cirrals; DEECKE (82) pp. 71, 72. †*P.* [i.e. *I.*] *amblyscalaris*; HUENE (166) p. 355: LISSAJOUS (195) p. 20. †*Cainocr.* [i.e. *Isocr.*] *andreae*; HUENE (166) p. 347. †*P.* [?= *I.*] *asteriscus*; DARTON (79) p. 388: crown discovered; KNIGHT (174) p. 386: columnals described, and compared with *P. subangularis*; LOGAN (205) pp. 113, 119, pl. xxv. †*Extracr.* [i.e. *P.*] *babeaui*; LISSAJOUS (195) p. 24. †*P.* [= *I.*] *bajocensis*; op. cit. p. 19: STRUEBIN (324) pp. 335, 337: GREPPIN (138) p. 191. †*P.* aff. *bajociensis*, stem-fragment, Callovian or Bajocian, Franz Josef Land; POMPECKJ (268) pp. 51, 120, pl. i. †*P.* [= *I.*] *basaltiformis*; LISSAJOUS (195) p. 18: STILLE (319) p. 13: var. *subrotunda* Quenst., and var. ? Mte. Domaro; BETTONI (34) pp. 8, 9, text-fig. †*P.* [i.e. *I.*] *berthae*, vide *P. gastaldii*. †*P.* [i.e. *I.*] *bronni*; BRYDONE (51) p. 12: DEECKE (82) pp. 55, 71. †*P.* [?= *I.*] *bryani*; CLARK (66) p. 339. †*Extracr.* [i.e. *P.*] *buchsgauensis*; LISSAJOUS (195) p. 24: HUENE (166) p. 362. †*P.* [= *I.*] *cingulatus*; LISSAJOUS (195) p. 19. †*P.* [= *I.*] *crista-galli*; loc. cit.: GREPPIN (138) p. 190: STRUEBIN (324) pp. 335, 337. †*Extracr.* [i.e. *P.*] *dargniesi*; LISSAJOUS (195) p. 24. †*P.* [i.e. *I.*] *desori*; HUENE (166) p. 365. †*P.* [i.e. *I.*] *gastaldii*, ? incl. *P. miocenicus* Lor. and *P. berthae* Nicolas, columnals redescri., list of localities; NOELLI (243) p. 5, pl. i. †*P.* [= *I.*] cf. *geisingensis*; LISSAJOUS (195) p. 19. †*P.*

- [=*I.*] *gracilis*; WALTON (346). +*P.* [= *I.*] *jurensis*; LISSAJOUS (195) p. 18. +*P.* [= *I.*] *guirandi*; op. cit. p. 20. +*P.* *kloedeni*, vide *P. agassizi*. +*P.* *lorioli*, **n. sp.**, Upper Helvetian, Piedmont, columnals only [apparently *Balanocr.*]; NOELLI (243) p. 10, pl. i. +*P.* [= *I.*] *mieryensis*; LISSAJOUS (195) p. 18. +*P.* *miocenicus*, vide *P. gastaldii*. +*P.* [i.e. *I.*] *neocomiensis*; KILIAN & LORY (170) p. 52. +*P.* [= *I.*] *nicoleti* (p. 19), +*P.* [= *I.*] *oceanii* (p. 18), +*P.* [= *I.*] *oxysealaris* (p. 19), +*P.* [= *I.*] *pellati* (p. 20); LISSAJOUS (195). +*P.* [i.e. *Balanocr.*] *pentagonalis*; HUENE (166) p. 355. +*P.* [= *I.*] *praetextus*; LISSAJOUS (195) p. 18. +*P.* [?= *I.*] *propinquus*; BROILI (48) p. 369; O. GORDON (132) p. 340 and (249) p. 309. +*P.* [= *I.*] *psilonoti*; LISSAJOUS (195) p. 17; ENGEL (106) p. 240; STILLE (319) p. 7. +*P.* [= *I.*] *rollieri*; LISSAJOUS (195) p. 18. +*P.* [= *I.*] *scalaris*; STILLE (319) p. 13. +*P.* [i.e. *Balanocr.*] *subbasaltiformis*; STOLLEY (320) pp. 110, 113. +*P.* [= *I.*] *subsulcatus*; LISSAJOUS (195) p. 17; STILLE (319) pp. 13, 14. +*P.* [?= *I.*] *tirolensis*; O. GORDON (132) p. 340, and (249) p. 309. +*P.* [= *I.*] *tuberculatus*; LISSAJOUS (195) p. 17; STILLE (319) pp. 9, 10. +*P.* [= *I.*] *würtembergicus*; GREPPIN (138) p. 202. *P.* [= *I.*] *wyvillethomsoni*, 1425 metres, Azores; RICHARD (282) p. 78.
- +*Pentagonites*; BATHER (19) p. 203.
- +*Periechocrinidae*, diagnosis, genera discussed; op. cit. p. 168.
- +*Periechocrinus*, incl. *Geocr.*, *Saccocr.*, *Pyxidocr.*, ? *Trochocr.*, ? *Pradocr.*, discussed; loc. cit. *P. chicagoensis*, **n. sp.**, Niagaran, Bridgeport & Joliet, Ill. (p. 131, pl. xiii); *P. egani*, redescrib., distinguished from *P. infelix* (p. 136, pl. xiii); *P. infelix*, redescrib. (p. 134, pl. xiii); *P. marcouanus*, redescrib. (p. 131, pl. xii); *P. necis*, redescrib. (p. 133, pl. xiii); *P. urniformis*, incl. *P. pyriformis* S. A. M., redescrib. (p. 135, pl. xii); WELLER (348).
- +*Periglyptocrinus*; BATHER (19) p. 161.
- +*Perischodomus magnus*, syn. of *Adelocr. hystrix*; op. cit. p. 203.
- +*Petalocrinidae*, diagnosis; op. cit. p. 175.
- +*Petalocrinus*, reconstruction; op. cit. p. 175, fig. xci.
- +*Petinocrinus*; op. cit. p. 203.
- Phanogenia*, vide *Actinometra*.
- +*Phialocrinus* Eichw.; BATHER (19) p. 203.
- +*Phialocrinus* Trautsch.; op. cit. p. 181, fig. c. *P. magnificus*, redescrib., measurements; BEEDE (29) p. 36, pl. vi.
- +*Phillipsocrinus*; BATHER (21) p. 108: systematic position discussed; BATHER (19) p. 170.
- +*Philocrinus*, vide *Woodocrinus*.
- +*Phimocrinus*, discussed, *P. jouberti*, bisected radials; BATHER (19) p. 152.
- +*Phoenicocrinus*, vide *Carpocrinus*.
- +*Phyllocrinus*; BATHER (19) p. 197. *P.* sp. ?, stem-fragment; LISSAJOUS (195) p. 3, pl. i.
- +*Physetocrinus*; BATHER (19) p. 170.
- Phytocrinus*, vide *Antedon*.
- Pictetocrinus*, vide *Isocrinus*.
- Pinnata* P. H. Carp. (p. 140), as Grade of *Flexibilia*, diagnosis, division into families *Apiocrinidae*, *Bourgueticrinidae*, *Antedonidae*, *Atelecrinidae*, *Actinometridae*, *Thaumatoecrinidae*, *Eugeniocrinidae*, *Holopodidae*, and *Eudesicrinidae* (pp. 191 et seq.); BATHER (19).
- +*Pionocrinus*, vide *Carpocrinus*.
- +*Pisocrinidae* [*Triacrinidae* Jack.], diagnosis and description of genera; BATHER (19) p. 149: emend. diagnosis, incl. *Pisocr.*, *Triacr.*, and *Cicerocr.*; SOLLAS (312) p. 270: variation of arm-structure, its limits in this fam. preclude admission of *Cicerocr.*; BATHER in discussion.
- +*Pisocrinus*, relations to allied genera; BATHER (19) p. 149, fig. lxii: rediagnosed; SOLLAS (312) p. 270: united with *Triacrinus*, which

- name has priority; JAEKEL (168) p. 482. *P. sp.* [? *pilula*], variation in basals; SOLLAS (312) p. 268, text-fig. 4. *P. flagellifer* [syn. of *pilula*]; ZITTEL & EASTMAN (369) p. 135, fig. 237: incorrectly oriented; BATHER in Reviews of this and of WELLER (348). *P. milligani* Mill. & Gurl. is syn. of *P. quinquelobus*; BATHER in Review of WELLER (348). Vide etiam *Triacrinus*.
- +*Platycrinidae*, diagnosis, discussion of genera, divided into sub-families, *Coccocrininae*, *Marsipocrininae*, *Platycrininae*; BATHER (19) p. 156.
- +*Platycrininae*, diagnosis; op. cit. p. 157.
- +*Platycrinus*, incl. *Centrocr.*, *Pleurocr.*, *Edwardsocr.*, descr., ontogeny; loc. cit. and figg. xlix, lxxi. *P. aff. arenosus*; PEACH (260) p. 223. *P. (?) dubius*, n. sp., Niagaran, Bridgeport, Ill., of strikingly Inadunate appearance; WELLER (348) p. 140, pl. xiv: probably one of the *Coccocrininae*; BATHER in Review. *P. huntsvillae*, young; BATHER (19) p. 158, fig. lxxi. *P. trigintidactylus*; PEACH (260) p. 223.
- +*Platysphaerites*; BATHER (19) p. 203.
- +*Pleurocrinus*, vide *Platycrinus*.
- +*Plicatocrinidae*, diagnosis, genera described; BATHER (19) p. 153.
- +*Plicatocrinus*, descr.; loc. cit. and fig. lxvi.
- +*Polycerus*, vide *Pentacrinus*.
- +*Polypeltes*; BATHER (19) p. 162.
- +*Pomatocrinus*, vide *Millericrinus*.
- +*Pomacrinus* Dittm. = *Traumatocr.*, vide *Encrinus*.
- +*Porocrinus* Bill., redescrib.; BATHER (19) p. 172, fig. lxxxvi. *P. sp.*; WINCHELL & ULRICH (357) p. cxxiii. *P. shawi*, n. sp., Trenton Limest., Silliman's Fossil Mt., Baffin Land; SCHUCHERT (302) p. 155, pl. xii. *P. smithi*, partial reconstruction; BATHER (19) p. 173, fig. lxxxvi.
- +*Poteriocrinus*; op. cit. p. 180, fig. xcix. *P. sp.*, similar to Salt-range sp., columnals; FRECH (124) p. 285. *P. crassus* et aff. *crassus*; PEACH (260) p. 223. *P. doris*, deep folds in anal sac, but no pores observed; SPRINGER (314) p. 149. *P. dudleyensis* Austin, not a *Cyathocr.* as supposed by WELLER (348); BATHER in Review. *P. nuciformis* et aff. *nuciformis*; PEACH (260) p. 223. *P. quenstedti* Golowkinsky; ENDERLE (105) p. 93, pl. viii. *P. tenuis* and *P. aff. ventricosus*; PEACH (260) p. 223.
- +*Pradocrinus*, vide *Periechocrinus*.
- +*Proclivocrinus*, vide *Euchirocrinus*.
- Promachocrinus*, discussed; BATHER (19) p. 195.
- +*Proteuryale*; op. cit. p. 203.
- Pterocoma*, syn. of *Antedon*; loc. cit.
- +*Pterotocrinus*, incl. *Asterocr.* Lyon, discussed; op. cit. p. 159.
- +*Ptychocrinus*; op. cit. p. 198.
- +*Pycnocrinus*, vide *Glyptocrinus*.
- +*Pycnosaccus*, incl. *Oncocr.*; BATHER (19) p. 187, fig. cvii. *P. americanus*, n. sp., Niagaran, Hawthorn, Ill., also, lapsu calami, as *P. ornatus*; WELLER (348) p. 149, pl. xv.
- +*Pyxidocrinus*, vide *Periechocrinus*.
- Regularia* Carpenter & Etheridge; BATHER (19) p. 139.
- +*Reteocrinidae*, restricted to *Reteocr.*, diagnosis; op. cit. p. 198.
- +*Reteocrinus*, descr.; loc. cit. and fig. cxxii.
- +*Rhadinocrinus*; BATHER (19) p. 179.
- +*Rhaphanocrinus*, incl. *Coelocr.* Salter; op. cit. p. 200.
- +*Rhipidocrinus*; op. cit. p. 201.
- Rhizocrinus*, descr.; op. cit. p. 194, figg. x, xxiii, xlix, cxvi: vide etiam *Conocrinus*. *R. sp.* nondescr., 1644-1668 metres, Somali coast, L. DOEDERLEIN photo, but no description; CHUN (63) pp. 487, 488. *R. rawsoni*, fine specimen, 1425 metres, Azores; RICHARD (282) p. 78.



- †*Rhodocalix*; BATHER (19) p. 203.
- †*Rhodocrinidae*, diagnosis, genera discussed; op. cit. p. 199.
- †*Rhodocrinus*; op. cit. p. 201.
- †*Rhopalocrinus*, referred provisionally to *Flexibilia Impinnata*, possibly *Dicyclia Inadunata*; BATHER (19) p. 191.
- †*Saccocoma*, incl. *Euryale*, habits; op. cit. p. 154, fig. lxviii.
- †*Saccocomidae*, diagnosis; op. cit. p. 154.
- †*Saccocrinus*, vide *Periechocrinus*. *S. semiradiatus*, vide sub *Macrostylocr.*
- †*Sagenocrinidae*, diagnosis, and *Sagenocrinus*; BATHER (19) p. 190, fig. xxiva.
- †*Sampsonocrinus*, perhaps an abnormal *Actinocr.*; op. cit. p. 170.
- †*Scaphiocrinidae*, diagnosis; BATHER (19) p. 180.
- †*Scaphiocrinus*, incl. *Hydriocr.* and *Abrotocr.*; loc. cit. and fig. xxvi. *S.* ? sp.; FOX (121) p. 146, and (122) p. 346. *S. arboreus*, pores in anal sac; SPRINGER (314) p. 147, pl. xvi. *S. hemisphaericus*; PROSSER (272) p. 163. *S. missouriensis* (p. 144), *S. swallovi* (p. 143), *S. unicus* (p. 142): pores in anal sac; SPRINGER (314) pl. xvi. *S.* ? *washburni*, n. sp., Upper Coal Measures, Osage Coal, Topeka, Kansas, type at Washburn College, "on the top of the sac there seems to be a madreporite" [if so it is not a *Poteriocrinid*, as supposed]; BEEDE (28) p. 21, pl. v, fig. 2: redescrip., measurements, BEEDE (29) p. 27, pl. vi.
- †*Schizocrinus*, incl. ? *Scyphocr.* Hall; BATHER (19) p. 161.
- †*Sclerocrinus*, vide *Gammarocrinus*.
- †*Scoliocrinus*; BATHER (19) p. 178.
- †*Scyphocrinus* Hall non Zenker, vide *Schizocrinus*.
- †*Scyphocrinus* Zenker, incl. *Camarocr.* and *Lobolithus*; BATHER (19) p. 161: its systematic position in *Melocrinidae*, diagnosis (p. 114), morphology of fixed brachials and pinnulars, their relations to the tegmen (pp. 115-119, fig. 7), tegmen, stem, and roots (p. 119); BATHER (21). *S. elegans*, var. ? *polonica* [? nom. nud.]; GUERICH (146) pp. 368, 373. *S. excavatus* Waag. & Jahn is identical with *S. elegans* Zenker, but *S. excavatus* Schloth. is not specifically determinable, the action of W. & J. criticised but accepted "for the sake of concord" (p. 115): var. *schlotheimi*, tertibrachs and fixed pinnulars (p. 117, fig. 7); BATHER (21).
- †*Scytalecrinidae*, diagnosis; BATHER (19) p. 180.
- †*Scytalecrinus*, incl. *Dactylocr.* Slad.; loc. cit. *S.* sp. indet. (p. 143), *S. hoveyi* (p. 145), *S. validus* (p. 141), *S. van hornei* (p. 145): pores in anal sac; SPRINGER (314) pl. xvi.
- Semiarticulata* Miller; BATHER (19) p. 138.
- †*Shumardocrinus*, syn. of *Steganocr. concinnus*; op. cit. p. 203.
- †*Sicyocrinus*, vide *Botryocrinus*.
- †*Siphonocrinus*, descr.; BATHER (19) p. 199. *S. nobilis*; NORTON (248) p. 438: redescrip., variation in interbrachial areas, iBr resting on BB as in *Rhodocrinidae*; WELLER (348) p. 86, pl. ii.
- †*Sitularia*, vide *Marsupites*.
- †*Solacrinus*, syn. of *Antedon*; BATHER (19) p. 203.
- †*Solanocrinus*, vide *Antedon*.
- †*Sphaerocrinidae*, diagnosis; BATHER (19) p. 173.
- †*Sphaerocrinus* M. & W., vide *Coelocrinus*.
- †*Sphaerocrinus* Roemer; BATHER (19) p. 173. *S.* sp.; FOX (121) p. 147 and (122) p. 351.
- †*Sphenocrinus*; BATHER (19) p. 203.
- †*Spyridiocrinus*, vide *Trybliocrinus*.
- †*Steganocrinus*; BATHER (19) p. 170.
- †*Stelidiocrinus*, incl. ? *Harmocr.*; op. cit. p. 161, fig. lxxv.
- †*Stemmatocrinus*; op. cit. p. 181.
- †*Stenocrinus*, vide *Heterocrinus*.



- †*Stephanocrinidae*, diagnosis; BATHER (19) p. 145.
- †*Stephanocrinus*, incl. *Rhombifera mira* (p. 145), redescri., relations to *Blastoidea* and *Crinoidea* (pp. 96, 145, fig. ii); op. cit. *S. angulatus*; GRANT (133). *S. osgoodensis*; WELLER (348) p. 151, pl. xv.
- †*Stereocrinus*; BATHER (19) p. 164. *S. triangulatus*; NORTON (248) p. 451.
- †*Stomatocrinoidea* Wachsmuth; BATHER (19) p. 139.
- †*Stortingocrinus*, "angles of the columnar canal radial in position" [erroneous statement, taken from Wachsmuth & Springer; the canal is round, as descr. by Schultze]; op. cit. p. 152.
- †*Streptocrinus*, incl. *Ophiocr.* Ang.; op. cit. p. 179: the "false pinnules" of Bather owe their position to the fusion of brachials; JAEKEL (167) p. 373.
- †*Strophocrinus*; BATHER (19) p. 172.
- †*Strotocrinus*, discussed; op. cit. p. 170. "*Strocotimus*" [= *Strotocrinus*], Burlington, Iowa; ORCUTT (252).
- †*Stylocrinus*, discussed; BATHER (19) p. 152.
- †*Sycocrinus*:—*S. anapeptamenos* is a *Hypocrinus*; *S. clausus* is a *Lageniocrinus*; *S. jacksoni* is a *Cryptocrinus*, vide IV, G; op. cit. p. 203.
- †*Symbathocrinidae*, diagnosis, genera discussed; op. cit. p. 152.
- †*Symbathocrinus*; loc. cit. and fig. lxxv: vide etiam *Crateriocrinus*.
- †*Symphytocrinus*, vide *Eugeniocrinus*.
- †*Syneroocrinus*, descr., probably incl. *Taxocr. nobilis* Kon.; *S. incurvus*, original drawings: BATHER (19) p. 190, fig. cxi.
- †*Synphocrinus*, vide *Bursacrinus*.
- †*Syringocrinus*, is stem of *Dendrocystis*, vide IV, G; BATHER (19) p. 203.
- †*Talarocrinus*; op. cit. p. 159.
- †*Tanaocrinidae*, diagnosis, and *Tanaocrinus*, discussed; op. cit. p. 164, fig. lxxviii.
- †*Taxocrinidae*, diagnosis, genera discussed; op. cit. p. 188.
- †*Taxocrinus*, incl. *Isocr.* Phill., *Cladocr.* Aust., *Euryalecr.*, *Forbesiocr.* Kon., diagnosed; op. cit. p. 189, figg. xxxvii, cx. *T. nobilis* Kon., vide *Syneroocrinus*.
- †*Technocrinus*; BATHER (19) p. 163. *T.* sp. nondescr., Monterey formation, Maryland, *T. andrewsi*, *T. sculptus*, *T. spinulosus*, *T. striatus*; SCHUCHERT (303) pp. 292, 313. *T. striatus* Hall, probably = *T. andrewsi*; WHITFIELD & HOVEY (351) p. 199.
- †*Teleiocrinus*, incl. *Calathocr.* pars Hall, discussed; BATHER (19) p. 170.
- †*Tesselata* Zittel; op. cit. p. 139.
- †*Tessellata* Müller; loc. cit.
- Testacea* Müller: op. cit. p. 138.
- †*Tetancrinus*, vide *Dolichocrinus*.
- †*Tetracrinus* Austin; BATHER (19) p. 203.
- †*Tetracrinus* Münster, origin as a sport; op. cit. p. 153: Jaekel's views as to basals misrepresented; BATHER in Review of ZITTEL & EASTMAN (369). *T. moniliformis*; LISSAJOUS (195) p. 3.
- †*Tetrameroocrinus*, syn. of *Melocr.* or *Mariacr.*; BATHER (19) p. 204.
- †*Thalamocrinus*, discussed; loc. cit.
- †*Thalloocrinus*, vide *Hapalocrinus*.
- Thaumatoocrinidae*, diagnosis, and *Thaumatoocrinus*; BATHER (19) p. 196, fig. cxix.
- †*Thenarocrinus*; op. cit. p. 179, fig. xcvi.
- †*Thiolliericrinus*, discussed; op. cit. p. 195. *T. algarbiensis*; CHOFFAT (62) p. 185. *T. flexuosus*, original figure; *T. ribeiroi*, reconstruction; BATHER (19) p. 195, fig. cxvii.
- †*Thylacocrinus*, descr., *T. vannioti*, original drawing; BATHER (19) p. 200, fig. cxxvi.
- †*Thysanocrinus*, vide etiam *Dimerocrinus*. *T. egani*, redescri., possibly only

- young of another sp. (p. 74); *T. occidentalis*, redescr., variety from Bridgeport (p. 73); *T. pentangularis*, redescr., incl. *Melocr. verneuili* Hall, abnormal anal area (p. 70): WELLER (348) pl. i.
- †*Tormocrinus*; BATHER (19) p. 197.
- †*Torynocrinus*, incl. *Cyrtocr.* and ? *Hemicr.*; loc. cit.
- †*Traumatocrinus*, vide *Encrinus*.
- †*Trematocrinus*, vide *Gilbertsocrinus*.
- †*Triacrinus*, incl. *Trichocrinus*, relations to *Pisocr.*; BATHER (19) p. 149, fig. lxii: incl. *Pisocr.*, the spp. form two series, the *pilula* type and the *pocillum* type (p. 482), *T. pilula*, analysis of cup, variation in position of small basal (p. 483, fig. 5); JAEKEL (168). Vide etiam *Pisocr.*
- †*Trianisites*; BATHER (19) p. 204.
- †*Tribrachiocrinus*, incl. *Pentadia*, pars; op. cit. p. 181, fig. c.
- †*Trichocrinus*, vide *Triacrinus*.
- †*Trigonocrinus*; BATHER (19) p. 197.
- †*Triplaricrinus* = *Hexacr. pateraeformis*; op. cit. p. 204. *Trochita*; loc. cit.
- †*Trochocrinus*, vide *Periechocrinus*.
- †*Trybliocrinus*, incl. *Spyridiocrinus*; BATHER (19) p. 163.
- †*Turbinocrinus*, vide *Melocrinus*.
- †*Uintacrinidae*, diagnosis; BATHER (19) p. 183.
- †*Uintacrinus*, infrabasals; loc. cit. and fig. ciii. *U.* sp. nondescr., England, as zonal fossil; ROWE (288) pp. 298 (text-fig.), 333, 347. *U. socialis*, tegmen; SPRINGER (315): distrib., mode of occurrence, slab with 220 calyces, of diameters 20 to 70 mm., mode of exhibition; BEECHER (27). *U. westfalicus*; SCHLUETER (297) p. 418.
- †*Ulocrinus*; BATHER (19) p. 181, fig. xxix.
- †*Uperocrinus*, vide *Hyperocrinus*.
- †*Vasocrinus*; BATHER (19) p. 179.
- †*Vletavicrinus*, discussed; op. cit. p. 204. *V. haueri* Waagen & Jahn's account criticised, doubtless a Monocyclic Camerate, and probably a Batocrinoid, why not a syn. of *Bohemiocr.*, or even of *B. pulvereus*?; BATHER (21) p. 109, fig. 4.
- †*Woodocrinus*, incl. *Philocr.* and *Pachylocr.*; BATHER (19) p. 180.
- †*Xenocrinidae*, diagnosis, with description of genera; op. cit. p. 165.
- †*Xenocrinus* Jahn, probably *Mariacrinus*; op. cit. p. 204.
- †*Xenocrinus* Miller; op. cit. p. 165, fig. lxxviii.
- †*Zeacrinus*; op. cit. p. 180, fig. xcix. *Z. ? mucrospinus*; PROSSER (272) pp. 153, 155, 157, 161, 165. *Z. ? robustus*, n. sp., Upper Coal Measures, Kansas City, type at Kansas Univ.; BEEDE (28) p. 22, pl. v, fig. 1: redescr., measurements, type at Kansas Univ.; BEEDE (29) p. 29, pl. vi.
- †*Zenkericrinus melocrinoides*, is a *Mariacr.* (q.v.); BATHER (21) p. 111.
- †*Zophocrinidae*, established for *Zophocrinus*; BATHER (19) p. 150.
- †*Zophocrinus howardi*, redescr. with original fig. lxiii; loc. cit.: internal casts; WELLER (348) p. 152, pl. xv.

#### †G. CYSTIDEA

(including EDRIOASTEROIDEA).

*Cystidea*, diagnosis (p. 39), classification (p. 40), severance of *Edrioasteroidea*, leaving Orders *Amphoridea*, *Diploporita*, *Rhombifera*, and *Aporita*; BATHER (19).

*Edrioasteroidea*, incl. *Thyroida*, *Agelacrinoidea*, *Cystasteroidea*, *Thecoidea*,

- diagnosis, divided into Families, *Agelacrinidae*, *Cyathocystidae*, *Edrioasteridae*, and *Steganoblastidae*; op. cit. p. 205 et sqq.
- Cystidea* of Bohemia after Barrande, revised according to JAEKEL (130) Zool. Rec. 1899, comprise 27 *Cystidea*, 7 *Carpoida* [*Anomalocystidae*], 4 *Thecoidea* [*Edrioasteroidea*], 2 *Blast.*, and 10 *Crin.*; PERNER (261).
- Cystid genus indet., a Diploporite; GUERICH (146) p. 370.
- Acanthocystis*; BATHER (19) p. 46.
- Achradocystis*, referred to *Comarocystidae*; op. cit. p. 55.
- Aesiocystis*, descr., referred to *Edrioasteridae*; op. cit. p. 208.
- Aethocystis*, referred to *Tiaracrinidae*; op. cit. p. 57.
- Agelacrinidae*, diagnosis, genera described; op. cit. p. 207.
- Agelacrinus*, descr.; loc. cit. and fig. iii. *A. buchianus*, vide sub *Edrioaster*.
- A. sp.* (p. cxxiii), *A. marginatus* (pp. xcv, xcvi); WINCHELL & ULRICH (357).
- Allocystis*, referred to *Sphaeronidae*; BATHER (19) p. 72.
- Amorphocystis*, vide *Caryocystis*.
- Amphoridea*, diagnosis and systematic account; BATHER (19) p. 43 et sqq.
- Amygdalocystis florealis*, original drawing; op. cit. p. 57, fig. xix.
- Anomalocystidae*, diagnosis and description of genera; op. cit. p. 49 et sqq.
- Anomalocystis*, anus described; ZITTEL & EASTMAN (369) p. 186; but anus is unknown; BATHER in Review. *A. cornutus* may be *Atelecystis*; BATHER (19) p. 51: SCHUCHERT (303) p. 280. *A. disparilis*; op. cit. pp. 292, 313: probably *Placocystis*; BATHER (19) p. 51.
- Anthocystis*, vide *Callocystis*.
- Apiocystis*, vide *Lepadocrinus*.
- Aporita*, provisional Order, diagnosed and restricted; BATHER (19) p. 69.
- Aporocrinus gyratus* Austin, is an *Agelacrinid*; op. cit. p. 201.
- Arachnocystis*, redescri.; op. cit. p. 54.
- Archegocystis*; BATHER (19) p. 73.
- Aristocystidae*, diagnosis, and account of genera; op. cit. p. 44 et sqq.
- Aristocystis*, redescri.; loc. cit. and figg. i-iii. *A. bohemicus*; ZELIZKO (366) p. 90.
- Ascocystis*, probably a Camerate *Crinoid*; BATHER (19) p. 77.
- Atelecystis*; op. cit. p. 51.
- Baculocystis*; op. cit. p. 46.
- Balanocystis*; op. cit. p. 77.
- Belemnocystis*; BATHER (19) p. 51.
- Calix*, incl. *Craterina* pars, redescri.; op. cit. p. 46, figg. v, vi.
- Callocystinae*, sub-fam. of *Glyptocystidae*; op. cit. p. 61.
- Callocystis*, incl. *Anthocystis*, redescri.; op. cit. p. 62, fig. xxxi.
- Cardiocystis*; BATHER (19) p. 77.
- Carpocystis*, referred to *Sphaeronidae*; op. cit. p. 73.
- Caryocrinidae*, diagnosis, and description of genera; op. cit. p. 65.
- Caryocrinus*; ZITTEL & EASTMAN (369), fig. 296 b: should be *Caryocystis*; BATHER in Review: redescri., incl. *Stribalocystis*, *Enneacystis*; BATHER (19) p. 67, fig. xxxvi. *C. ornatus*; WILLIAMS (352) p. 51.
- Caryocystis*, incl. *Amorphocystis*, redefined with genotype *C. angelini* = *C. testudinarius* Auctt.; BATHER (19) p. 55, fig. xvii. *C. granatum*; WIMAN (356).
- Cheirocrinus*, redescri., *C. penniger* (fig. xxxii), *C. volborthi*; BATHER (19) p. 63.
- Cigara*; op. cit. p. 48.
- Citrocystis*, vide *Echinosphaera*.
- Codiocystis*; BATHER (19) p. 73.
- Comarocystidae*, diagnosis, and description of genera; op. cit. p. 55.
- Comarocystis*, redescri.; loc. cit.
- Corylocrinus*, redescri.; op. cit. p. 67, fig. xxxvi.
- Craterina*, vide *Calix*. *C. bohemia* and *C. docens*; ZELIZKO (366) p. 90.

- Crinocystis*, probably a Camerate *Crinoid*; BATHER (19) p. 77.
- Cryptocrinidae*, retained in *Aporita*, genera descr.; op. cit. p. 69.
- Cryptocrinus*, redescri.; loc. cit. and fig. xxxvii.
- Crystallocystis*, vide *Echinosphaera*.
- Cyathocystidae*, diagnosis, and *Cyathocystis*, descr.; BATHER (19) p. 208, fig. v.
- Cyclocysteroidea*, referred to *Edrioasteroidea*, descr.; op. cit. p. 210, fig. viii.
- C. sp.*; WINCHELL & ULRICH (357) p. cxxiii.
- Cystaster*, incl. *Thecocystis*, descr.; BATHER (19) p. 207, fig. ii.
- Cystoblastus*, redescri., referred to *Glyptocystinae*, relationship to *Blastoids* denied; op. cit. p. 64, fig. xxxv.
- Dendrocystidae*, diagnosis; BATHER (19) p. 47.
- Dendrocystis*, redescri.; loc. cit. and fig. ix.
- Deutocystis*, redescri.; op. cit. p. 46, fig. vii.
- Dictyocrinus*; op. cit. p. 77.
- Dinocystis*; BATHER (19) p. 209.
- Diploporita*, Order, diagnosis and classification; op. cit. p. 70 et seq.
- Discocystis*; op. cit. p. 208.
- Echinoencrininae*, sub-fam. of *Glyptocystidae*; op. cit. p. 60.
- Echinoencrinus*, redescri., incl. *Gonocr.* and *Sycocystis*, and perhaps *Erinocystis*; BATHER (19) p. 60, figg. xxii, xxiii.
- Echinosphaera*, incl. *Crystallocystis*, *Citrocystis*, *Trinemacystis*, redescri.; op. cit. p. 53, figg. xiv, xv. *E. baltica*; ALMERA (8) p. 733, and (9) p. 744; MALAISE (218) p. 806, and (219) p. 205. *E. munita*; op. cit. p. 200.
- Echinosphaeridae*, diagnosis and description of genera; BATHER (19) p. 52 et seq.
- Edrioaster*, descr.; op. cit. p. 209. *E. sp.*; WINCHELL & ULRICH (357) p. cxxiii. *E. bigsbyi*, original drawings; BATHER (19) p. 209, fig. vi.
- E. buchianus*, redescription of holotype, and portion of another specimen; BATHER (20).
- Edrioasteridae*, diagnosis, genera discussed; BATHER (19) p. 208.
- Enneacystis*, vide *Caryocrinus*.
- Enoploura*, maintained for *E. balanoides* and *E. crustacea*, the latter restricted; BATHER (19) p. 51.
- Eocystidae*, founded for *Eocystis longidactylus* and forms of similar structure; op. cit. p. 48.
- Eocystis* Billings, discussed (p. 48), *E. (?) longidactylus* (p. 49, fig. x); BATHER (19).
- Erinocystis*, vide *Echinoencrinus*.
- Eucystis*, redescri. perhaps incl. *Holocystites* spp. and *Trematocystis*; BATHER (19) p. 72, fig. xl.
- Eurycystis* sp.; WINCHELL & ULRICH (357) p. cxxiii.
- Fungocystis*, reconstruction; BATHER (19) p. 74, fig. xlv.
- Glaphyrocystis*; op. cit. p. 60.
- Glyptocystidae*, diagnosis, erection of sub-families *Echinoencrininae*, *Callocystinae*, *Glyptocystinae*, with description of genera; op. cit. p. 58.
- Glyptocystinae*, sub-fam. of *Glyptocystidae*; BATHER (19) p. 63.
- Glyptocystis*, redescri.; op. cit. p. 64, fig. xxxiii. *G. sp.*; WINCHELL & ULRICH, p. cxxiii.
- Glyptosphaera leuchtenbergi*, redescri.; BATHER (19) p. 73, fig. xliii.
- Glyptosphaeridae*, diagnosis, and description of genera; loc. cit.
- Gomphocystidae*, diagnosis; op. cit. p. 76.
- Gomphocystis*, redescri.; op. cit. p. 77, fig. xlviii.
- Gonocrinus*, vide *Echinoencrinus*.
- Hallicystis*, vide *Lepadocrinus*.
- Haplocystis*, discussed; BATHER (19) p. 208.
- Heliocrinus*, incl. *Heliocystis*; op. cit. p. 55.



- Hemicosmites*, incl. *Hexalacystis*, redescrib.; op. cit. p. 66, fig. xxxvi.  
*Hemicystis*, discussed; BATHER (19) p. 207.  
*Heterocystis*, redescrib., referred to *Caryocrinidae*; op. cit. p. 67, fig. xxxvi.  
*Hexalacystis*, vide *Hemicosmites*.  
*Holocystites gyrinus*; BATHER (19) p. 72, fig. xlii.  
*Holocystis*, vide *Megacystis*.  
*Homocystis*; BATHER (19) p. 64.  
*Juglandocrinus*, redescrib.; op. cit. p. 67, fig. xxxvi.  
*Lapillocystis*; op. cit. p. 46. *L. fragilis*; ZELIZKO (365) pp. 321, 323.  
*Lepadocrinus*, incl. *Apiocystis*, *Staurocystis*?, *Hallicystis*, and *Pseudocr.*  
*quadrifasciatus* and *P. oblongus*, redescrib.; BATHER (19) p. 61, figg.  
 xxix, xxx. *L. sp.* nondescr., Helderbergian, New York, and *L. geb-*  
*hardi*; SCHUCHERT (303) p. 280.  
*Lepadocystis*, incl. *Meekocystis*, redescrib.; BATHER (19) p. 61, fig. xxviii.  
*Lepidodiscus*, descr.; op. cit. p. 208, fig. iv.  
*Lichenocrinus* sp.; WINCHELL & ULRICH (357) p. cxxiii. *L. affinis*;  
 SCHUCHERT (302) p. 155.  
*Lichenoides*, incl. *Lichenocystis*, redescrib.; BATHER (19) p. 56. *L. priscus*;  
 ZELIZKO (365) pp. 322, 323.  
*Lodanella*; BATHER (19) p. 46. *L. mira* Kayser (as Sponge), has 5  
 forked arms, as a Crinoid, but stereom structure resembles *Cyst. e.g.*  
*Craterina*; SCHLUETER (298).  
*Lysocystis*, incl. *Echinocystis* Hall and *Scolocystis* Greg., redescrib.; BATHER  
 (19) p. 70.  
*Macrocytella*, redescrib., probably incl. *Mimocystis*; op. cit. p. 56, fig.  
 xviii.  
*Macrocytellidae*, diagnosis, and description of genera; loc. cit.  
*Malocystidae*, diagnosis, and description of genera; BATHER (19) p. 57.  
*Malocystis*; op. cit. p. 58.  
*Meekocystis*, vide *Lepadocystis*.  
*Megacystis*, discussed; BATHER (19) p. 47.  
*Mesocystidae*, diagnosis; op. cit. p. 75.  
*Mesocystis*, syn. *Mesites* Hoffm., redescrib.; loc. cit. and fig. xlvii.  
*Mimocystis*, vide *Macrocytella*.  
*Mitrocystis*, redescrib.; BATHER (19) p. 50, fig. xii. *M. sp.*; ZELIZKO (365)  
 p. 323.  
*Neocystis*; BATHER (19) p. 77.  
*Orocystis*, redescrib.; op. cit. p. 54, fig. xv.  
*Palaeocystis*; loc. cit.  
*Palmacystis*; BATHER (19) p. 73.  
*Pilocystis*; op. cit. p. 46.  
*Pirocystis*; op. cit. p. 47, fig. viii.  
*Placocystis*, redescrib.; op. cit. p. 51, fig. xiii.  
*Platycystis*; BATHER (19) p. 51.  
*Pleurocystis*, redescrib.; op. cit. p. 64, fig. xxxiv. *P. sp.*; WINCHELL &  
 ULRICH (357) p. cxxiii.  
*Pomocystis*, rejected; BATHER (19) p. 72.  
*Pomonites*, rejected; loc. cit.  
*Pomosphaera*, rejected; BATHER (19) p. 72.  
*Porocrinus*, vide sub IV, F.  
*Proteocystis*, redescrib.; BATHER (19) p. 73, fig. xli.  
*Proteroblastus*, syn. *Dactylocystis*, redescrib.; op. cit. p. 74, fig. xlvii.  
*Protocrinidae*, diagnosis, and description of genera; BATHER (19) p. 74.  
*Protocrinus*, redescrib.; loc. cit. and fig. xlv.  
*Prunocystis*, incl. *P. fletcheri* (fig. xxiv) and *Echinoencr. baccatus*, redescrib.;  
 BATHER (19) p. 60.  
*Pseudocrinus*, redescrib.; op. cit. p. 62, fig. xxix; vide etiam *Lepadocr.*  
*Rhombifera*, Order, diagnosis, and classification; op. cit. p. 52.

- Rhombifera* Barr., genus redescri., *R. mira* referred to *Stephanocr.*; op. cit. p. 57.
- Schizocystis*, redescri.; BATHER (19) p. 61, figg. xxv-xxvii.
- Scoliocystis*; op. cit. p. 60.
- Sphaerocystis*; op. cit. p. 63. *S. multifasciatus*; SCHUCHERT (303) p. 280.
- Sphaeronidae*, diagnosis, and description of genera; BATHER (19) p. 71.
- Sphaeronis*, redescri.; loc. cit. and figg. xxxviii, xxxix. *S. punctatus*; MALAISE (219) p. 200. *S. stelluliferus*; MALAISE (218) p. 806, and (219) pp. 196, 205.
- Staurocystis*, vide *Lepadocrinus*.
- Staurosoma*, vide *Tiaracrinus*.
- Steganoblastidae*, fam. of *Edrioasteroidea*, diagnosis; BATHER (19) p. 209.
- Steganoblastus*, incl. *Astrocystites*, descr. and discussed, with original drawings of *S. ottawaensis*; loc. cit. and fig. vii.
- Stichocystis*; BATHER (19) p. 55.
- Streptaster*; op. cit. p. 208.
- Stribalocystis*, vide *Caryocrinus*. *S.?* *elongatus*, **n. sp.**, *Delthyris* Shaly Limest., Lower Helderberg group, Red Rock landing, Perry county, Mo.; *S. missouriensis*, **n. sp.**, Niagara Limest., St. Genevieve county, Mo.; ROWLEY (289) p. 71, pl. ii.
- Strobilocystis*; BATHER (19) p. 63.
- Stromatocystis*, descr.; op. cit. p. 207, fig. i.
- Sycocystis*, vide *Echinoencrinus*.
- Syringocrinus paradoxus*; BATHER (19) p. 48.
- Tiaracrinidae*, diagnosis, and description of genera; op. cit. p. 57.
- Tiaracrinus*, incl. *Staurosoma*, redescri.; loc. cit.
- Trigonocystis*, vide *Trochocystis*.
- Trinemacystis*, vide *Echinospaera*.
- Trochocystis*, incl. *Trigonocystis*, redescri.; BATHER (19) p. 50, fig. xi.

#### †H. BLASTOIDEA.

- Blastoidea*, diagnosis, division into Grades *Proto-* and *Eu-blastoidea*, with classification; BATHER (19) p. 78 et sqq.
- Acentrotremites*, redescri., referred to *Orbitremitidae*; op. cit. p. 90, fig. xii.
- Asteroblastidae*, diagnosis, and description of genera; op. cit. p. 80.
- Asteroblastus*, incl. *Asterocystis*, redescri.; loc. cit. and figg. i, ii.
- Astocrinus*, vide *Zygocrinus*.
- Blastoidocrinidae*, diagnosis; BATHER (19) p. 80.
- Blastoidocrinus*, redescri. with reconstruction; loc. cit. and fig. iii.
- Codaster*, redescri.; op. cit. p. 82, figg. v, vi. *C. gracillimus*; ROWLEY (289) p. 66, pl. ii: horizon; ROWLEY (291) p. 249. *C. grandis*, test now first figured; ROWLEY (289) p. 66, pl. ii: horizon; ROWLEY (291) p. 250. *C. (Cryptoschisma?) laeviculus*, **n. sp.**, base of Upper Burlington Limest., Louisiana, Mo.; ROWLEY (289) p. 65, pl. ii: ventral view; ROWLEY (290) pl. v, fig. 74: horizon, is not *Codaster*, but nearer to *Phaenoschisma* and [or] *Cryptoschisma*; ROWLEY (291) p. 250.
- Codasteridae*, diagnosis; BATHER (19) p. 91.
- Codonites*, vide *Orophocrinus*.
- Codonoblastida*, Series of *Eublastoidea*, incl. *Codasteridae* and *Pentremitidae*; BATHER (19) p. 91.
- Cryptoblastus*, redescri.; op. cit. p. 89. *C. melo*, horizons, variation, probably incl. *C. concinnulus* and *C. projectus*; ROWLEY (291) p. 245.

*Cryptoschisma*, redescrib.; BATHER (19) p. 84, fig. vii: vide etiam *Codaster laeviculus*.

*Dimorphocrinus*, vide *Orophocrinus*.

*Elaeocrinus*, vide *Nucleocrinus*.

*Eleutheroocrinidae*, diagnosis; BATHER (19) p. 92.

*Eleutheroocrinus*, redescrib.; op. cit. p. 87, fig. ix.

*Eublastoidea*, higher grade of *Blastoidea*, diagnosis, and classification into Series *Codonoblastida*, *Troostoblastida*, and *Granatoblastida*; op. cit. pp. 81-93.

*Granatoblastida*, Series of *Eublastoidea*, incl. *Nucleocrinidae*, *Orbitremitidae*, *Pentaphyllidae*, and *Zygocrinidae*; BATHER (19) p. 92.

*Granatoblastidae*, vide *Orbitremitidae*.

*Granatocrinus*, vide *Orbitremites*.

*Heteroblastus*; BATHER (19) p. 90.

*Irregulares*, Order, rejected; op. cit. p. 91.

*Mesoblastus*, referred to *Orbitremitidae*; op. cit. pp. 90, 92.

*Metablastus*, redescrib.; op. cit. p. 87. *M. lineatus*, range; ROWLEY (291) p. 250.

*Nucleocrinidae*, diagnosis and restriction; BATHER (19) p. 92.

*Nucleocrinus*, incl. *Elaeocr.* and *Olivanites*, redescrib.; op. cit. p. 88, figg. x, xi.

*Olivanites*, vide *Nucleocrinus*.

*Orbitremites*, incl. *Granatocr.*, redescrib.; BATHER (19) p. 90, figg. xii, xv.

*G.* [i.e. *O.*] sp., Timor; BOEHM (41) p. 555. *G.* [i.e. *O.*] sp. nondescr., Lower Burlington Limest.; ROWLEY (289) p. 74, pl. ii. *G.* [i.e. *O.*] *aplatus*, enlarged fig.; op. cit. p. 67, pl. ii: range, variations; ROWLEY (291) p. 248. *G.* [i.e. *O.*] *calycinus*, n. sp., base of Upper Burlington Limest., Louisiana, Mo.; ROWLEY (289) p. 66, pl. ii: horizon; ROWLEY (291) p. 249. *G.* [i.e. *O.*] *excavatus*; loc. cit. *G.* [i.e. *O.*] ?*magnibasis*, horizon; loc. cit. *G.* [i.e. *O.*] *mutabilis*, horizon, growth-stages (p. 250); *O. norwoodi*, horizons, variation, with var. *fimbriatus* (p. 247); *G.* [i.e. *O.*] *pyriformis* [sic] (p. 249); *G.* [i.e. *O.*] ?*pisum*, range, variation, perhaps incl. *G. exiguus* (p. 248); *G.* [i.e. *O.*] *roemeri*, range, incl. *G. sampsoni* (p. 250); ROWLEY (291) *G.* [i.e. *O.*] *spinuliferus*, n. sp., Warsaw? (St. Louis) Limest., Grand Tower, Ill., and Wittenberg, Mo.; ROWLEY (289) p. 69, pl. ii. *G.* [i.e. *O.*] *stella*, n. sp., base of Upper Burlington Limest., Louisiana, Mo., this with *G. magnibasis* may form a new genus; ROWLEY (289) p. 68, pl. ii, and (291) p. 249.

*Orbitremitidae*, revision and diagnosis; BATHER (19) p. 92.

*Orophocrinus*, incl. *Dimorphocr.* and *Codonites*, redescrib.; op. cit. p. 85, figg. iv, vii. *O. conicus*? in Lower Burlington; ROWLEY (291) p. 251. *C.* [i.e. *O.*] ?*inopinatus*, and an allied form, these with *Granatocr. aplatus* perhaps constitute a new genus; ROWLEY (289) p. 67, pl. ii: range; ROWLEY (291) p. 248. *O. stelliformis*, range, growth-stages; op. cit. p. 249. *C.* [i.e. *O.*] *whitii*?; ROWLEY (289) p. 68, pl. ii: horizon; ROWLEY (291) p. 249.

*Pentatremites*, vide *Pentremites*.

*Pentaphyllidae*, diagnosis; BATHER (19) p. 93.

*Pentaphyllum*, discussed; op. cit. p. 90.

*Pentremites*, redescrib.; op. cit. p. 86, figg. vii, xv. *P.* sp.; DOUVILLE (94) p. 593. *Pentatremites* [i.e. *Pentremites*] sp.; JAEKEL in FRECH (124) p. 204, fig. 45. *P. benedicti*, n. sp., Warsaw? (St. Louis) Limest., Grand Tower, Ill., and Wittenberg, Mo.; ROWLEY (289) p. 69, pl. ii. *P. burlingtonensis*, "probably a rotund *P. elongatus*"; ROWLEY (291) p. 248. *P. elongatus*, range, extra anal plate; op. cit. p. 247.

*Pentremitidae*, diagnosis and restriction; BATHER (19) p. 92.

*Pentremitidea*, redescrib.; op. cit. p. 85.

*Phaenoschisma*, redescrib.; op. cit. p. 84, fig. vii.

*Protoblastoidea*, the lower grade of *Blastoidea*, diagnosis, and classification into families *Asteroblastidae* and *Blastoidocrinidae*; op. cit. pp. 79-81.

*Regulares*, Order, rejected; BATHER (19) p. 91.

*Schizoblastus*, redescri.; op. cit. p. 89. *S.* sp. nondescr. (p. 249), *S. sayi*, horizons, variation, anal tube (p. 247); ROWLEY (291).

*Tricoelocrinus*, redescri.; BATHER (19) p. 87, fig. xv.

*Troostoblastida*, Series of *Eublastoidea*, incl. *Troostocrinidae* and *Eleutherocrinidae*; op. cit. p. 92.

*Troostoblastidae*, vide *Troostocrinidae*.

*Troostocrinidae*, diagnosis; BATHER (19) p. 92.

*Troostocrinus*, redescri.; op. cit. p. 86, fig. viii. *T.?* *dubius*, n. sp., Delthyris Shaly Limest., Lower Helderberg group, Wittenberg, Mo.; ROWLEY (289) p. 70, pl. ii.

*Zygocrinidae*, diagnosis; BATHER (19) p. 93.

*Zygocrinus*, incl. *Astrocrinus*, redescri.; op. cit. p. 91, fig. xiv. *A.* [i.e. *Z.*] *benniei*; PEACH (260) p. 223.

## K. INCERTAE SEDIS.

†*Paropsonema cryptophya*, n. g. et sp., *Intumescens* zone, Portage Sandstone, Naples, N.Y. "probably an echinoid," but "the characters are so unusual and so different from structures presented by the fossil and recent *Echinodermata*" [that its Echinoderm nature is very doubtful]; CLARKE (68).





# XV. VERMES.

BY

ARTHUR WILLEY, D.Sc.

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## INTRODUCTION.

THE helminthological work for the year 1900 shows no signs of abatement.

Professor McINTOSH's (198) monograph of the British Aphroditea, being the first part of his long expected monograph of British Polychæta, is probably the most notable systematic publication of the year. An epoch in the taxonomy of Oligochaeta is without doubt inaugurated by MICHAELSEN's catalogue (209). Among other works dealing with the classification, anatomy and physiology of the Annelida we may note the researches of DARBOUX (92) on the Aphroditea, METALNIKOFF (203) on *Sipunculus*, GOODRICH (125) on the nephridia of *Polychæta*, BEDDARD (19) on the genus *Amyntas* formerly *Perichæta*, now itself doomed to give way to *Pheretima*, GAMBLE & ASHWORTH (118) on Arenicolidae, EHLERS (101), GRAVIER (128), FISCHLI (107) and VERRILL (319), on the Polychæta of Magellan Strait, Red Sea, Ternate and the Bermudas respectively; APSTEIN (6) on Pelagic Polychæta, BLANCHARD (33), BRUMPT (58), CASTLE (68), MOORE (221) and SUKATSCHOFF (307), on the Hirudinea; F. SMITH (292), BOCK (37) and EISEN (103) on Oligochaeta; HASWELL (140) on a new Histriobdellid.

New genera of Nemertina reveal themselves to BERGENDAL (28), PUNNETT (251), THOMPSON (313). The habits and development of *Cerebratulus lacteus* are described as a contribution to physiological morphology by C. B. WILSON (337).

Turbellarians are described by SABUSSOW (278), SHIPLEY (288), FUHRMANN (112), DÖRLER (95). Regeneration of Planarians is investigated among others by MORGAN (224), MONTI (218), LILLIE (169) and LEMON (167).

Entozoa as usual come in for a large share of attention from ARIOLA (8), COHN (79), BRAUN (43), FUHRMANN (110), LOOSS (181), LÜHE (182), LINSTOW (176), SHIPLEY (289), VOLZ (323), WOLFFHÜGEL (338), BENHAM (26), BENEDICT (24), RÁTZ (258), NASSONOW (227) and many others. The veteran helminthologist STOSSICH (305) has the customary annual monograph which is very hard to come by, while the habits of free-living Nematoda are the subject of another masterpiece by MAUPAS (196).

Rotifera, intimately associated with Plankton-researches, are described by ROUSSELET (276), J. C. SMITH (294), JENNINGS (160), listed by ZSCHOKKE (342) in a notable mémoire couronné, also by AMBERG (3), BURCKHARDT (60), ZYKOFF (344), KOFOID (162) and illustrated by HAECKEL (137).

ROULE's (275) work on the development of *Phoronis* records a host of data and touches on matters of controversy between him and MASTERMAN (192).

ITTER (265) describes Enteropneusta from Alaska, the principal feature being a species which he names *Harrimania maculosa* n. g. et sp.

It may be noted, however, that the character upon which he bases the new genus is not peculiar to this form which, in fact, is a *Balanoglossus* s. str. In the vicissitudes of nomenclature it nevertheless seems likely that *Harrimania* will triumph over *Balanoglossus*, not to mention *Balanocephalus*.

Finally, it is interesting to note the discovery of a new species of *Balanoglossus* s. str. (*B. koehleri*) in the Channel at Cape de la Hague, by the indefatigable zoologists CAULLERY & MESNIL (70).

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1. ALLEN, E. J. & TODD, R. A. The Fauna of the Salcombe Estuary. J. Mar. Biol. Ass. (N. S.) vi, Vermes, pp. 188-199.  
*Polychæta* by E. J. ALLEN.
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4. ANDREWS, C. W. A monograph of Christmas Island (Indian Ocean). London, 1900. [Earthworms by D. ROSA, q. v. (268).]
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Sturiones. *Bothriocephalidæ*; LÜHE, Zool. Anz. xxiii, p. 8.

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New Guinea; RÁTZ (258).



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- Acoelus crassus*, n. sp., p. 370; from *Tringa* sp., Brazil; *vaginatus* (Rud.) = *armatus* Fuhrmann, p. 369; FUHRMANN, Centrbl. Bakter. xxviii.
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- Anonchotenia* n. g. *clava*, n. sp., in *Parus cœruleus*, p. 95; COHN, t. c.
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- Bothriocephalus cristatus* Dav., p. 308; GALLI-VALERIO, Centrbl. Bakter. xxvii.
- B. didelphidis*, n. sp., intestine of *Didelphys azarae*, Brazil, p. 418; ARIOLA, Arch. parasit. iii.
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- B. spiraliceps*, n. sp., p. 165; VOLZ, Arch. Naturg. lxvi.
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- D. hemignathi* Shipley, p. 429; SHIPLEY, Fauna Hawaiiensis ii, Pt. iv.
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- Hymenolepis tetraonis*, n. sp.; WOLFFHÜGEL (Abstract) Centrbl. Bakter. xxvii, p. 841. Inaug. Dissert. p. 191, from intestine and cæcum of *Tetrao urogallus*.
- Ichthyotænia birbi*, p. 980, *saccifera*, p. 981, n. spp., from *Varanus* sp., New Guinea; RÁTZ, C.R. Soc. Biol. lii.
- Idiogenos mastigophora* Krabbe from *Milvus ater* in Turkestan, p. 150; VOLZ, Arch. Naturg. lxvi.
- Mesogoninae* new sub-fam. of *Bothriocephalidae*, p. 388; ARIOLA, Arch. parasit. iii.
- Metroliaesthes* n. g. *lucida*, n. sp.; RANSOM, Tr. Amer. Micr. Soc. xxi, p. 213.
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- Paronia* n. g. *carrinoi*, n. sp., p. 846, from *Lorius erythrothorax* and *Cyclopsittacus suavisissimus* in New Guinea and *Ptilonotus* sp. in Sumatra; DIAMARE, Centrbl. Bakter. xxviii, also in Atti Soc. Ligustica xi, p. 141.
- Phyllobothrium dipsadomorphi*, n. sp., p. 550; SHIPLEY, Zool. Results (Willey), Pt. v.
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- P. diomedæ* Fuhrmann, n. sp., p. 557; SHIPLEY, Zool. Results (Willey), Pt. v.
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- Schistotenia* n. g. type *Sch. macrorhyncha* (Rud.), p. 276; COHN, Zeitschr. wiss. Zool. lxvii.
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- T. alternans*, n. sp., from *Tringa totanus*, p. 96; COHN, Zool. Anz. xxiii.
- T. armigera*, p. 161, *mollis*, p. 163, n. spp., *constricta* Mol., p. 117; VOLZ, Arch. Naturg. lxvi.
- T. leptcephala* Creplin, parasite of mouse, rat, and man = *T. diminuta* Rud.; PREVITERA, Bull. Acc. Gioen., March 1900, Fasc. lxiii, p. 9.
- T. mychocephala*, p. 981, n. sp., from *Varanus* sp., New Guinea; RÁTZ, v., C.R. Soc. Biol. lii.
- T. zichyi*, n. sp., *cercocystis* only from *Diaptomus asiaticus*, p. 202; DADAY, Zool. Jahrb. Syst. xiv.
- T. (Cenurus) socialis* in thigh of rabbit; GALLIER, Bull. Soc. Normand. (5) iii, p. xxxix.
- T. (Hymenolepis) horrida*, n. sp., p. 1, from *Mus decumanus*; LINSTOW, Arch. Naturg. lxvii.
- Tetrabothrium*, synonymy, p. 365, *cylindraceum* Rud., p. 362, *erostre* Lönnberg, p. 364; LINSTOW, Centrbl. Bakter. xxvii.
- T. macrocephalum* Rud., p. 3; LINSTOW, Arch. Naturg. lxvii.
- Trienophorinae*, subfamily of *Bothriocephalide* (q. v.), containing those genera which possess marginal genital pores, p. 99; LÜHE, Zeitschr. wiss. Zool. lxviii.

## TREMATODA.

### GENERAL BIOLOGY.

Monograph. Genus *Clinostomum* Leidy; BRAUN, Zool. Jahrb. Syst. xiv.

Copulatory apparatus. *Distomum megastomum*, p. 68; JÄGERSKIÖLD, Centrbl. Bakter. xxvii.

Genital sucker. *Distomum megastomum*, p. 68, and *Levinsonia pygmæa*, p. 732; JÄGERSKIÖLD, L. A., Centrbl. Bakter. xxvii.

Development. Larvæ of *Clinostomum* in Brazilian fishes all belong to one species probably *Cl. marginatum* (Rud.). *Clinostomum* larvæ have not yet been found in European fishes and the infection of European birds (*Ardea*, *Nycticorax*) perhaps takes place in N. Africa; BRAUN, Zool. Jahrb. Syst. xiv, p. 42.

Nervous system by Golgi's Method of *Distomum hepaticum*, p. 353; HAVET, Cellule xvii.

Parasitology. Distomids in pericardium of a Japanese Helicid, *Eulota despecta*; JACOBI, Centrbl. Bakter. xxviii, p. 27.

Infection. *Distomum felinum* in human liver in East Prussia, p. 491; ASKANAZY, Centrbl. Bakter. xxviii.

Pathogenic action of *Polystomum integerrimum* on the urogenital apparatus of the frog, p. 162; PÉGOT, C.R. Soc. Biol. lii.

Morbid Histology. Action of *Cercaria* on the tissues of *Paludina*, p. 345; CHATIN, C.R. Soc. Biol. lii.

Reproductive System. *Distomum ampullaceum*, p. 592; BUTTEL-REEPEN, Zool. Anz. xxiii.

Statistics. Of 140 specimens of *Pleuronectes limanda*, 15 were infested by *Aporocotyle simplex*, i.e. 11.5 p.c., p. 63; ODHNER, Centrbl. Bakter. xxvii. Out of 50 cats in only 4 was the liver infected with *Distomum felinum*, p. 516; RÁTZ, v., op. cit. xxviii.

Suctorial apparatus. Suckers of *Distomum tubiporum* tubular projections .5 mm. long, the length of worm being 2.6 mm. and width 1.4 mm., p. 388; BRAUN, Zool. Anz. xxiii. Accessory sucker in *Podocotyle furcatum* (Brems.), p. 489; LÜHE, t. c.

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Amphibia. *Distomum arcanum*, n. sp. in pylorus of American frogs; NICKERSON, Amer. Natural. xxxiv, p. 811.

Reptilia. Distomids from Ophidia and Lacertilia, p. 555; LÜHE, Centrbl. Bakter. xxviii.

Aves. Distomidæ from gall-bladder etc. of sea-birds, *Larus*, *Vulpanser*, *Somateria* etc., p. 12; ODHNER, Centrbl. Bakter. xxviii.

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Chiroptera. *Fasciolidæ*, p. 387; BRAUN, Zool. Anz. xxiii.

France. Trematode Parasites of the bile-ducts of indigenous birds, all belonging to genus *Dicrocoelium* (Duj.) Looss; RAILLIET, C.R. Soc. Biol. lii, p. 239.

Mediterranean. Distomids from the gall-bladder of Mediterranean fishes, p. 504; LÜHE, Zool. Anz. xxiii.

North America. Synopsis of monogenetic Trematodes; PRATT, Amer. Natural. xxxiv, p. 645. Ectoparasitic Trematodes from Rhode Island, p. 263; GOTO, J. Coll. Japan xii.

Canada. Trematodes of Frogs and Turtles; STAFFORD, Zool. Jahrb. Syst. xiii.

Brazil. Species of *Clinostomum* from mouth, pharynx and œsophagus of Brazilian Birds, p. 24; BRAUN, Centrbl. Bakter. xxvii.

Fasciolidae of Brazilian bats, pp. 388-391; BRAUN, Zool. Anz. xxiii.

Australia and Tasmania. *Temnocephaleæ*, p. 430; HASWELL, P. Linn. Soc. N. S. Wales xxv.

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*Allocreadium* n. n. for *Creadium*, p. 602; LOOSS, Zool. Anz. xxiii.

*Anaporrhutum* n. g. *albidum*, n. sp. from celom and pericardium of *Aetiobatis narinari*; OFENHEIM, Zeitschr. Naturw. 73, p. 145.

*Anisocaelum* n. g. type *A. capitellatum* (Rud.) from gall-bladder of *Uranoscopus scaber*, p. 504, allied to *Gymnophallus* q. v.; LÜHE, Zool. Anz. xxiii.

*Aporocotyle* n. g. *simplex*, n. sp., gills of *Pleuronectes limanda* and *flesus*, p. 62; ODHNER, Centrbl. Bakter. xxvii.

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*Braunina* n. g. from the intestine of Dolphin and *Squalus*, p. 19; HEIDER, Verh. Deutsch. zool. Ges. 1900.

*Campula oblonga* Cobb. from bile-ducts of *Phocaena communis*, p. 249; BRAUN, Centrbl. Bakter. xxviii.

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*C. heterostomum* Rud. differs from all other species of the genus by the presence of 9 to 11 pairs of long cœca at the outer sides of the intestinal trunks, p. 141; BRAUN, Zool. Anz. xxiii.

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*D. caudatum* v. Linstow, 1873 = *D. leptostomum* Olsson, 1876; v. LINSTOW, Zool. Anz. xxiii, p. 85.

*D. lancea* Dies, p. 579; WESKI, Centrbl. Bakter. xxvii.

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- D. ampullaceum*, n. sp. probably from the Golden Mackerel, *Coryphæna*, often called dolphin by seamen, p. 586: *siemersii* n. sp. from stomach of *Sphyræna barracuda*, p. 596; BUTTEL-REEPEN, H. v., t. c.
- D. saginatum*, n. sp., p. 437, from the common bile-duct of *Ardea alba*; v. RÁTZ, Centrbl. Bakter. xxviii.
- D. rhyacophila*, n. sp., p. 370; LINSTOW, Arch. mikr. Anat. lvi.
- Dolichodemus* n. n. for *Dolichosomum*, p. 603; LOOSS, Zool. Anz. xxiii.
- Emoleptalea* n. n. for *Leptalea*, p. 602; LOOSS, t. c.
- Enodiotrema* n. n. for *Enodia*, p. 602; LOOSS, t. c.
- Epibdella sciænæ* P. J. v. Ben., p. 269; GOTO, J. Coll. Japan xii.
- Eumegacetes* n. n. for *Megacetes*, p. 602; LOOSS, Zool. Anz. xxiii.
- Fasciola bergi*, n. sp., p. 193, from body-cavity of *Raja platana*; PARONA, Comun. Mus. Buenos Aires i, pp. 190–197, 1 fig.
- Gymnophallus* n. g. *choledochus*, p. 18, *bursicola*, p. 20, n. spp. Type of genus *G. deliciosus* (Olss.), p. 14; ODHNER, Centrbl. Bakter. xxviii.
- Halipegus*, n. sp.?, p. 558, from *Coluber olivaceus*, Brazil, apparently identical with *H. orocaudatus* (Vulpian) from *Rana esculenta* and *temporaria* of Europe; LÜHE, t. c.
- Harmostomum* n. g. type *Distomum leptostomum* Olss.; BRAUN, Zool. Anz. xxii 1899, p. 492, also Zool. Jahrb. Syst. xiv, 1900, pp. 5 & 12. This name, contained in a note, was overlooked last year; it takes priority of *Heterolope* Looss.
- Heterolope* Looss gives way to *Harmostomum* Braun q. v.; BRAUN, Zool. Jahrb. Syst. xiv, p. 13.
- Ityogonimus* Lühe to give way to *Dolichodemus* Looss, p. 607; LOOSS, Zool. Anz. xxiii.
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- Levinsoniella* n. n. for *Levinsonia* pre-occupied; WARD, Tr. Amer. Micr. Soc. xxii, p. 176.
- Microcotyle pomatomi*, p. 278: *stenotomi*, p. 279: *hiatulae*, p. 281: *longicauda*, p. 282, n. spp.; GOTO, J. Coll. Japan xii.
- Microphallus* n. g. type *Dist. opacum* Ward, 1894, from *Amia calva*; WARD, Tr. Amer. Micr. Soc. xxii, p. 175.
- Microscaphidium* n. n. for *Microscapha*, p. 602; LOOSS, Zool. Anz. xxiii.
- Monostomum amiuri*, Swim-bladder of *Amiurus nebulosus*, p. 402, n. sp.; STAFFORD, Zool. Jahrb. Syst. xiii.
- M. trigonocephalum* Rud., detailed description; SHIPLEY, Zool. Results (Wiley), Part v, pp. 532–540.
- Opisthogonimus*, n. g., *lecithonotus*, n. sp., p. 555 = *O. dryadum* (West), see p. 743; LÜHE, Centrbl. Bakter. xxviii.
- Opisthorchis pseudofelineus*, n. sp., p. 180 (footnote); WARD, Tr. Amer. Micr. Soc. xxii.
- Orchidasma* n. n. for *Anadasmus*, p. 602; LOOSS, Zool. Anz. xxiii.
- Phyllonella hippoglossi* (O. F. M.), p. 264; GOTO, J. Coll. Japan xii.
- Plagiorchis* Lühe, genus rejiciendum, p. 607; LOOSS, Zool. Anz. xxiii.
- Podocotyle furcatum* (Brems.), pp. 488–492; LÜHE, t. c.
- Polystomum hassalli*, n. sp., p. 276; GOTO, J. Coll. Japan xii.
- Prosthogonimus* Lühe, to give way to *Prymnoprion* Looss, p. 608; LOOSS, Zool. Anz. xxiii.
- Ptychogonimus* n. g. type *Pt. megastomus* (Rud.), p. 489; LÜHE, t. c.
- Rhopalias coronatus* (Dies.), *horridus* (Dies.) and *baculifer* n. sp. all from

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*Schisturus* Rud., genus rejiciendum, p. 492; LÜHE, t. c.  
*Stephanochasmus* n. n. for *Stephanostomum*, p. 603; LOOSS, t. c.  
*Stomylotrema* n. n. for *Stomylus*, p. 602; LOOSS, t. c.  
*Telorchis* Lühe to read *Telorchis* Looss, p. 608; LOOSS, t. c.  
*Temnocephala tasmanica*, p. 430, *aurantiaca*, p. 431, *cæca*, p. 432, n. spp.; HASWELL, P. Linn. Soc. N. S. Wales xxv.  
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## NEMATHELMINTHES.

### NEMATODA.

#### GENERAL BIOLOGY.

Frequent occurrence of *Filaria* in *Lepidoptera*, see *Insecta*, Titles; SCHULTZ (1166).

Anatomy. *Trichocephalus*, p. 779; HEINE, Centrbl. Bakter. xxviii.

Anhydrobiosis. Resistance of the eggs of *Ascaris megalcephala*; BATAILLON, C.R. Soc. Biol. lii, pp. 435 & 437.

Culture of free-living Nematoda; MAUPAS, Arch. Zool. exp. (3) viii, p. 463.

Dermatology. *Filaria*; DUBREUILH, Centrbl. Bakter. xxviii, p. 456.

Development of *Ascaris decipiens* Krabbe; the larvæ occur in closely packed masses with the head end imbedded in the gastric mucosa of *Trichechus rosmarus* and *Phoca barbata*, where they undergo several ecdyses and then become free and pass into the intestine of the same host where they become sexually mature. In like manner the larva of *Nemat-oxyis longicauda* Linst. grows in the lung of *Triton teniatus*, *alpestris* and *cristatus*, finally migrating into the intestine of the same host where it becomes mature, pp. 119-124; LINSTOW, Fauna Arctica. *Sclerostomum equinum* Duj., p. 846; CONTE, C.R. Ac. Sci. cxxxi.

Life-history. *Ancylostoma duodenale*; GILES, Centrbl. Bakter. xxvii, p. 83.

Parasitology. Eye-parasites; KRÄMER, Centrbl. Bakter. xxviii, p. 517; SUPINO, Rend. Acc. Lincei (5) ix-1, p. 85. Nematodes of Coffee-Plant, p. 676; ZIMMERMANN, J. R. Micr. Soc. 1900. Penetration of *Anguillula intestinalis* into the intestinal wall, p. 569; ASKANAZY, Centrbl. Bakter. xxvii.

Parasitology of *Periplaneta americana*, p. 34; MAGALHÃES, Arch. parasit. iii. Elephant, p. 509; PIANA e STAZZI, Arch. parasit. iii.

Anchylostomiasis. PROWE, Centrbl. Bakter. xxvii, p. 83; KUBORN, Centrbl. Bakter. xxviii, p. 215. Possible connection between the practice of geophagy in Fiji and the occurrence of the intestinal parasite *Ancylostomum duodenale* in Indian coolies who work on the sugar plantations; CORNEX, DAVID & GUTHRIE, J. R. Soc. N. S. Wales xxxiii, p. 225.

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*Anoplostoma gracile*, n. sp., p. 128, Taf. vii, figg. 42 & 43, Spitzbergen; LINSTOW, Fauna Arctica.

*Aphelenchus agricola* de Man, p. 571; MAUPAS, Arch. Zool. exp. (3) viii.

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*A. decipiens* Krabbe, stomach of seals and walruses, p. 119, Taf. vi, figg. 1-20 and vii, figg. 21-27; LINSTOW, Fauna Arctica.

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- Filaria* of the human eye, synonymy; SUPINO, Rend. Acc. Lincei (5) ix-1, p. 85.
- F. bancrofti* Cobbold, p. 76, *magalhãesii* Manson, p. 79, and other species of blood *Filaria*; v. LINSTOW, Zool. Anz. xxiii, p. 76.
- F. hæmorrhagica* is subcutaneous tissue of horse, p. 517; RÁTZ, Centrbl. Bakter. xxviii.
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- Plectus cirratus* Bast., p. 567; MAUPAS, Arch. Zool. exp. (3) viii.
- Rhabditis elegans* Maupas, p. 477, *caussaneli* Maupas, p. 494, *marionis*, p. 506, Normandy, *duthiersi*, p. 513, *perrieri*, p. 518, *viguierei*, p. 527, n. spp., *dolichura* Schneider, p. 531, *coronata* Cobb, p. 536, *schneideri* Bütschli, p. 553; MAUPAS, t. c.
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- Thoracostoma denticaudatum* Schn., p. 126, Taf. vii, figg. 36 & 37. Spitzbergen under dead marine animals; LINSTOW, Fauna Arctica.
- Trichosoma brevicolle* Rud., small intestine of goose, *caudinflatum* Molin, small intestine of domestic fowl, *retusum* Railliet, cæca of fowl, *longispiculum* Sonsino, intestine of *Python molurus* Gr.; KOWALEWSKI, Bull. Ac. Cracovie 1900, p. 183.



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*Uncinaria os-papillatum*, n. sp., p. 512. Intestine of Elephant; PIANA e STAZZI, Arch. parasit. iii.

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*Apororhynchidae* new family with single genus and species *A. hemignathi* Shipley, p. 440; SHIPLEY, Fauna Hawaiiensis ii, Part iv.  
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## ROTIFERA.

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Anatomy. Detailed description of external morphology, adhesive disc, skin and tissues, alimentary, nervous and excretory systems of *Apsilus vorax* (Leidy); GAST, Zeitschr. wiss. Zool. lxvii.

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- Actinotrocha*-larva of *Phoronis hippocrepia* Wright, in Valencia Harbour, p. 690; BROWNE, P. Irish Ac. (3) v.
- Balanocephalus* nov. mut. for *Balanoglossus* s. str.; HARMER, P. Cambridge Soc. x, p. 190.
- Balanocephalus koehleri*, n. sp., Cape de la Hague allied to *B. kupfferi*. Length 5-6 c.m. width 1 mm. to 1.5 mm. maximum: specimens of 4 c.m. have voluminous mature genital glands: 8 specimens found in the tidal zone in small gravel-beds in rock-pools, 25 pairs of gill-slits; CAULLERY et MESNIL, C.R. Soc. Biol. lii, p. 256.
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- Harrimania* n. g. *maculosa*, n. sp., Alaska, like *B. kupfferi* in external characters. [Balanoglossidæ.] RITTER, P. Washington Ac. ii, p. 111.
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## XVI. CŒLENTERATA.\*

By

ARTHUR WILLEY, D.Sc.

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\* The Editor regrets that owing to the business of the Recorder in connection with his departure for Ceylon, this subject has not been quite completely dealt with. The omissions will be made good in next year's Record.



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- Multioralis* n. g. *ovalis*, n. sp., p. 54; MAYER, Bull. Mus. Harvard xxxvii.
- Myriothela gigantea*, p. 38; *mitra*, p. 38, n. spp.; BONNEVIE, Norwegian N. Atl. Exp. 1876-1878, Zool. xxvi.
- Netocertoides* n. g. *brachiatum*, n. sp., p. 45; MAYER, Bull. Mus. Harvard xxxvii.
- Niobia* n. g. *dendrotentacula*, n. sp., p. 36; MAYER, t. c.
- Nuditheca* n. g. type *dalli* (Clark), p. 128; NUTTING, Bull. U. S. Mus. Spec. Bull. iv.
- Obelia linearis*, n. sp., New Britain, pl. 44, fig. 6; *delicatula*, n. sp., New Britain, 40 fms., fig. 7; *serrulata* (Bale) ibid. fig. 5; THORNELY, Zool. Res. (Willey) iv.
- O. nigra*, n. sp., p. 721; BROWNE, P. Irish Ac. (3) v.
- Oecania caroline*, p. 7, *singularis*, p. 7; *discoida*, p. 51; *gelatinosa*, p. 51; *globosa*, p. 51; *magnifica*, p. 50, n. spp.; MAYER, Bull. Mus. Harvard xxxvii.
- Octonema gelatinosa*, n. sp., p. 8; MAYER, t. c.
- Orchistoma tentaculata*, n. sp., p. 8; MAYER, t. c.
- Perisiphonia pectinata* Allm., p. 18; PICTET et BEDOT, Campagnes Scient. (Prince de Monaco) Fasc. xviii.
- Phortis lactea*, n. sp., p. 58; MAYER, Bull. Mus. Harvard xxxvii.
- Plumularia altitheca*, p. 58; *floridana*, p. 59; *alternata*, p. 62; *inermis*, p. 62; *goodei*, p. 64; *corrugata*, p. 64; *palmeri*, p. 65; *virginie*, p. 66; *profunda*, p. 66; *dendritica*, p. 67; *paucinoda*, p. 68, n. spp.; NUTTING, Bull. U. S. Mus. Spec. Bull. iv.
- P. compacta*, n. sp., New Caledonia, pl. 44, fig. 3, p. 457; THORNELY, Zool. Res. (Willey) iv.
- P. variabilis*, p. 91; *rubra*, p. 91, n. spp.; BONNEVIE, Norwegian N. Atl. Exp. 1876-1878, Zool. xxvi.
- Polyplumularia armata*, n. sp., p. 83; NUTTING, Bull. U. S. Mus. Spec. Bull. iv.
- Polyplumaria flabellata* Sars, p. 28; PICTET et BEDOT, Campagnes Scient. (Prince de Monaco) Fasc. xviii.
- Pseudoclytia* n. g. *pentata*, n. sp., p. 53; MAYER, Bull. Mus. Harvard xxxvii.
- Rhacostoma dispar*, n. sp., p. 61; MAYER, t. c.
- Schizotricha dichotoma*, p. 78; *parvula*, p. 79, n. spp.; NUTTING, Bull. U. S. Mus. Spec. Bull. iv.
- Selaginopsis arctica*, p. 87, n. sp.; BONNEVIE, Norwegian N. Atl. Exp. 1876-1878, Zool. xxvi.

- Sertularella* Gray, 1848, Systematic Monograph of the genus: *S. pluma*, p. 26, n. sp.; *tropica*, n. n., p. 41; *modesta*, p. 42; *affinis*, p. 43; *flexilis*, p. 44, n. spp.; *monopleura*, n. n., p. 73; *protecta*, p. 79; *pæssleri*, p. 80, n. spp.; *allmani*, n. n., p. 81; *antarctica*, n. n., p. 82; *mediterranea*, p. 86, n. spp.; HARTLAUB, Abh. Ver. Hamburg xvi.
- Sertularia pusilla*, n. sp., Lifu; *littoralis*, n. sp., Lifu, p. 455; THORNELLY, Zool. Res. (Willey) iv.
- Stomotoca rugosa* = *S. apicata* Fewkes, p. 4; *australis*, p. 32, n. spp.; MAYER, Bull. Mus. Harvard xxxvii.
- Syndictyon angulatum*, n. sp., p. 5; MAYER, t. c.
- Tetracannota* n. g. *collapsa*, n. sp., p. 46; MAYER, t. c.
- Thecocarpus* n. g. *normani*, p. 108; *benedicti*, p. 109, n. spp. Type *myriophyllum* (L.), p. 107; NUTTING, Bull. U. S. Mus. Spec. Bull. iv.
- Thuidaria articulata* (Pallas), p. 25; PICTET et BEDOT, Campagnes Scient. (Prince de Monaco) Fasc. xviii.
- Tiara superba*, n. sp., p. 34; MAYER, Bull. Mus. Harvard xxxvii.
- Tiaropsis punctata*, n. sp., p. 49; MAYER, t. c.
- Tubularia variabilis*, p. 26; *cornucopia*, p. 29, n. spp.; BONNEVIE, Norwegian N. Atl. Exp. 1876-1878, Zool. xxvi.
- Zygodactyla cubana*, n. sp., p. 60; MAYER, Bull. Mus. Harvard xxxvii.

## HYDROCORALLINA.

### GENERAL BIOLOGY.

Female Medusæ of *Millepora*; HICKSON, P. R. Soc. London lxvi, p. 3.

### DISTRIBUTION.

S. Africa: Hydrocorallinæ of Cape; HICKSON, Marine Invest. S. Africa, No. 5.

### SYSTEMATIC.

*Allopora nobilis* Sav., Kent, p. 93; HICKSON, Marine Invest. S. Africa, No. 5.

## SIPHONOPHORA.

### GENERAL BIOLOGY.

Cnidoblasts of Siphonophora, monograph, p. 133; SCHNEIDER, Arb. Inst. Wien xii.

### DISTRIBUTION.

Tortugas, Florida; MAYER, Bull. Mus. Harvard xxxvii.

### SYSTEMATIC.

- Agalma viridis*, n. sp., p. 80; MAYER, Bull. Mus. Harvard xxxvii.
- Chunia* n. g. *capillaria*, n. sp., p. 78; MAYER, t. c.
- Diphyopsis hispaniana*, n. sp., p. 76; MAYER, t. c.
- Ersæa hispaniana*, n. sp., p. 77; MAYER, t. c.

## †GRAPTOLITHIDA.

## DISTRIBUTION.

Wales: Graptolites of the Wenlock Shales, p. 370; ELLES, Quart. J. Geol. Soc. 56.

## SYSTEMATIC.

*Cyrtograptus carruthersi* Lapw. = (?) *Monograptus nilssoni* (Barr.), p. 408; ELLES, Quart. J. Geol. Soc. 56.

*Cyrtograptus symmetricus*, p. 410, and 376, n. sp.; ELLES, t. c.

*Monograptus flexilis*, p. 405; *irfonensis*, p. 407, n. spp.; *testis* var. *inornatus*, n. var., p. 408; ELLES, t. c.

*M. colonus* var. *compactus*, n. var., p. 466; *varians*, n. sp., p. 467, var. *pumilus*, n. var., p. 469; *leintwardinensis* Lapw. var. *incipiens*, n. var., p. 475; *uncinatus* var. *orbatus*, n. var., p. 476; *crinitus*, n. sp., p. 480; WOOD, t. c.

*M. vulgaris*, p. 455; *tumescens*, p. 458; *comis*, p. 459, n. spp.; WOOD, t. c.

*Retiolites spinosus*, n. sp., p. 485; WOOD, t. c.

## CTENOPHORA.

## GENERAL BIOLOGY.

*Ctenophora*: Structure and Classification. *Celoplana metschnikowii* Kow. figured on p. 18; BOURNE (17).

## DISTRIBUTION.

Messina: Ctenophores of the harbour; CURRERI, Boll. Soc. zool. Ital. An. ix, Ser. 2, Vol. 1, Fasc. 3 & 4, p. 190.

Western Atlantic: New species of *Mnemiopsis*; MAYER, Bull. Mus. Harvard xxxvii.

## SYSTEMATIC.

*Mnemiopsis mcraayi*, n. sp., p. 9; MAYER, Bull. Mus. Harvard xxxvii.

## SCYPHOZOA.

## GENERAL BIOLOGY.

Anatomy and development of *Cassiopea xamachama*, p. 191; BIGELOW, Mem. Boston Soc. v.

Anatomy: Lucernaridæ; GROSS, Jena. Zeitschr. 33, pp. 611-624.

Development: *Blastula*, *Gastrula*, *Planula* and *Scyphula* of *Aurelia aurita*; HEIN, Zeitschr. wiss. Zool. lxvii, p. 401.

Natural History of *Halicystus*; BLACKBURN, Tr. Manchester Micr. Soc. 1900, p. 59.

*Scyphomedusæ*: Structure and Classification; FOWLER (34).

Sense-organs: Rhopalia of *Atolla* and *Periphylla*, pp. 278 & 279; VANHÖFFEN, Zool. Anz. xxiii.



## DISTRIBUTION.

Valencia Harbour: Stauromedusæ; BEAUMONT, P. Irish Ac. (3) v.

Western Atlantic: Scyphomedusa *Bathyluca solaris*, n. g. et sp.; MAYER, Bull. Mus. Harvard xxxvii.

Jamaica: Cubomedusæ; BERGER, Mem. Johns Hopkins Univ. iv, p. 1.

Bathymetrical distribution: *Atolla*, *Periphylla* and *Periphyllopsis*, deep-sea Medusæ never occurring at a less depth than 600 metres, p. 278; VANHÖFFEN, Zool. Anz. xxiii.

North Pacific. *Halicystus stejnegeri*, n. sp. from Bering Island—measuring 18 mm. in height and 18 mm. in diameter; KISHINOUE, P. U. S. Mus. xxii, p. 125.

## SYSTEMATIC.

*Atolla chuni, valdiviæ*, n. spp., p. 277; VANHÖFFEN, Zool. Anz. xxiii.

*Aurelia habanensis*, n. sp., p. 69; MAYER, Bull. Mus. Harvard xxxvii.

*Bathyluca*, n. g. *solaris*, n. sp., p. 2; MAYER, t. c.

*Charybdea aurifera*, n. sp., p. 70; MAYER, t. c.

*Halicystus auricula* (Rathke), p. 806; BEAUMONT, P. Irish Ac. (3) v.

*H. stejnegeri*, n. sp., p. 126, Bering Island; KISHINOUE, P. U. S. Mus. xxii.

*Lucernaria*, unnamed, n. sp., p. 811; BEAUMONT, P. Irish Ac. (3) v.

*Periphyllopsis*, n. g., p. 278, VANHÖFFEN, Zool. Anz. xxiii.

†*Rhizostomites*. Fossil Medusæ, p. 51; MASSAT, Naturaliste xxii.

## ANTHOZOA.

## GENERAL BIOLOGY and DISTRIBUTION.

Classification of Class Anthozoa.

Sub-Class I. *Alcyonaria*.

Grade A. *Protalcyonacea*.

Grade B. *Synalcyonacea* n.

Order 1. *Stolonifera*.

„ 2. *Alcyonacea*.

„ 3. *Pseudaxonia*.

„ 4. *Axifera*.

„ 5. *Stelechotokea* n.

„ 6. *Cenothealia* n.

Sub-Class II. *Zoantharia*.

Grade A. *Paramera* n.

Order 1. *Cerianthidea*.

„ 2. *Antipathidea*.

„ 3. *Zoanthidea*.

„ 4. *Edwardsiidea*.

„ 5. *Proactiniæ*.

Grade B. *Cryptoparamera* n.

Order 6. *Actiniidea*.

Sub-order 1. *Malacactiniæ* n.

„ 2. *Scleractiniæ* n. (= Madreporaria); BOURNE (16).

Corsica. Anthozoa; ROULE, Bull. Soc. zool. France xxv, p. 125.

## ALCYONARIA.

## GENERAL BIOLOGY.

Anatomy: *Tubipora*, *Clavularia*, *Telesto*; HICKSON & HILES, Zool. Res. (Willey) iv: *Xeniidæ*; ASHWORTH, t. c.

Ancestry of *Heliopora*; GREGORY, P. R. Soc. London lxvi, pp. 19 and 291.

Gonads. In *Tubipora musica* ♂, young sperm sacs in their follicles were found on the 6 ventral mesenteries only as described by VON KOCH; in *Clavularia viridis* ♀ the ovisacs were attached to all 6 of the ventral mesenteries below the ventral mesenterial filaments; hermaphroditism of very rare occurrence in Alcyonarians; HICKSON & HILES, Zool. Res. (Willey) iv.

*Xeniidæ*, ovisacs and sperm sacs on the edges of the ventral and lateral mesenteries of the larger polyps; *Xenia viridis* a protandric hermaphrodite, p. 517; ASHWORTH, t. c.

Growth of *Pleurocorallium* at Madeira; JOHNSON, P. Zool. Soc. London 1899, pp. 978 & 979.

Monograph: Alcyonaria of the Golfe du Lion; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii, p. 353.

## DISTRIBUTION.

Arctic: Arctic and subarctic Alcyonacea comprising 9 species of Clavulariidae (6 of *Clavularia* and 3 of *Symphodium*), 1 *Organidus*, 5 Alcyonidae, 34 Nephthyidae all placed in the genus *Paraspongodes* of which 3 new; there are no circumpolar species; bathymetrical distribution, p. 405; MAY, Fauna Arctica.

Antarctic: Subantarctic Alcyonacea, comprising 9 species, 2 Clavulariidae and 7 Alcyonidae; MAY, t. c.

Mediterranean: Alcyonaria of the Golfe du Lion; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii, p. 353.

Bermudas: Alcyonaria, p. 568; VERRILL, Tr. Connect. Ac. x.

Oriental Region: Alcyonacea of the China Sea and Japan; PÜTTER, Zool. Jahrb. Syst. xiii.

New Britain etc.: *Alcyonacea*; HICKSON & HILES, Zool. Res. (Willey) iv: *Xeniidæ*; ASHWORTH, t. c.

New Guinea: *Stolonifera*; HICKSON & HILES, t. c.

S. Africa: Alcyonaria of Cape; HICKSON, Marine Invest. S. Africa, No. 5.

*Alcyonium* at Cullercoats; BRADY, Nat. Hist. Tr. Northumb. xiii, p. 442.

## SYSTEMATIC.

*Acrophytum*, n. g. *claviger*, n. sp., p. 74; HICKSON, Marine Invest. S. Africa, No. 5.

*Alcyonium glomeratum* Hassall, New Britain, p. 503, previously recorded from coasts of Great Britain and Norway; *macropodium*, n. sp., New Britain, pl. 50, figg. 8-10, p. 504; HICKSON & HILES, Zool. Res. (Willey) iv.

*Ammothea*, said to be a spurious genus to be merged with *Nephthya*; the name moreover preoccupied by a Pycnogonid, p. 498; HICKSON & HILES, t. c.

- A. rubriflora*, China Sea, p. 451, n. sp.; PÜTTER, Zool. Jahrb. Syst. xiii.  
*Bellonella rigida*, Japan, p. 448, n. sp.; PÜTTER, t. c.  
*Cavernularia elegans* (Herklots), p. 89; HICKSON, Marine Invest. S. Africa, No. 5.  
*Clavularia viridis* Q. and G. from D'Entrecasteaux Group (British New Guinea), p. 494, pl. 51, figg. 13 & 14; HICKSON & HILES, Zool. Res. (Willey) iv.  
*Eleutherobia*, n. g. *japonica*, Japan, p. 449, n. sp.; PÜTTER, Zool. Jahrb. Syst. xiii.  
*Eunicea grandis*, n. sp., p. 570; VERRILL, Tr. Connect. Ac. x.  
*Fascicularia* Viguier, p. 452; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii.  
*Gorgonia capensis*, n. sp., p. 83; HICKSON, Marine Invest. S. Africa, No. 5.  
*Haimeia* M. E., genus of doubtful autonomy, p. 454; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii.  
+ *Heliopora somaliensis*, n. sp. from the Cretaceous of Somaliland, p. 299; GREGORY, P. R. Soc. London lxvi.  
*Heteroxenia capensis*, p. 70, n. sp.; HICKSON, Marine Invest. S. Africa, No. 5.  
*Juncella elongata* (Pall.), p. 85; HICKSON, t. c.  
*Lobularia* Sav. a spurious genus as maintained by KLUNZINGER, p. 502; HICKSON & HILES, Zool. Res. (Willey) iv.  
*Melitodes dichotoma* (Pall.) p. 80; HICKSON, Marine Invest. S. Africa, No. 5.  
*Nephtya virescens* (Sav.) = *Ammothea virescens* Sav. Description, p. 500; HICKSON & HILES, Zool. Res. (Willey) iv.  
+ *Octotremacis*, n. g., type *Polysolenia hochstetteri* v. Reuss from Miocene of Java, p. 302; GREGORY, P. R. Soc. London lxvi.  
*Organidus*, spurious genus; *O. nordenskjöldi* Daniellsen = *Bellonella arctica* (Dan.) sp. juv. The family *Organine* also falls; PÜTTER, Zool. Jahrb. Syst. xiii, pp. 444 & 446.  
*Paralcyonium* M. E. Note, p. 451; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii.  
*Paraspongodes caduca*, p. 394, *uvæformis*, p. 395, *globosa*, p. 400, n. spp.; MAY, Fauna Arctica.  
+ *Polytremacis septifera*, n. sp., a Helioporida from the Turonian of Gosau, p. 301; GREGORY, P. R. Soc. London lxvi.  
*Rolandia coralloides*, n. sp., Gulf of Lyons, p. 424, LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii.  
*Sarcophytum trochiforme*, n. sp., p. 77; HICKSON, Marine Invest. S. Africa, No. 5.  
*Spongioderma verrucosum* Möb., p. 78, HICKSON, t. c.  
*Spongodes mucronata*, p. 454, *sinensis*, p. 455, *candida*, p. 456, *folifera*, p. 458, *microspiculata*, p. 459, China Sea, n. spp.; PÜTTER, Zool. Jahrb. Syst. xiii.  
*S. semperi* Studer, Lifu, 30 fms., pl. 50, figg. 5-7, p. 499; *rakaiya*, n. sp., New Britain, 3-4 fms., pl. 51, fig. 11, p. 499; HICKSON & HILES, Zool. Res. (Willey) iv.  
*Symphodium coralloides*, p. 369; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii.  
*Telesto rupicola* Müller, 50 fms., pl. 50, figg. 1 & 2; *arthuri*, n. sp., 30 fms., pl. 50, figg. 3 & 4, and pl. 51, fig. 12, New Britain; HICKSON & HILES, Zool. Res. (Willey) iv.  
*Tubipora musica* L. a multifacial species like *Millepora alcicornis*; HICKSON & HILES, t. c.  
*Xenia crassa* Schenk, New Caledonia, p. 510; *membranacea* Schenk, New Britain, p. 512; *umbellata* Sav., New Britain, p. 513; *viridis* Schenk, New Caledonia; *novæ britannicæ*, n. sp., p. 518; tabular synopsis of species of *Xenia*, p. 524; ASHWORTH, t. c.

## ANTIPATHARIA.

## DISTRIBUTION.

Madeira: Antipatharian faunule comprising 8 species; JOHNSON, P. Zool. Soc. London 1899, p. 813.

## SYSTEMATIC.

*Antipathella gracilis* (Gray), p. 819, *brookii*, n. sp., p. 821; JOHNSON, P. Zool. Soc. London 1899.

*Antipathes furcata* Gray, p. 819, JOHNSON, t. c.

*Aphanipathes wollastoni* Brook, p. 821, var. *pilosa*, n. var., p. 822, JOHNSON, t. c.

*Leiopathes glaberrima* (Esper) M.-Edw., p. 817, *expansa*, n. sp., p. 817; JOHNSON, t. c.

*Savaglia* (= *Gerardia*) *lamarcki* (Haime), p. 814; JOHNSON, t. c.

*Stichopathes gracilis* (Gray) p. 815, *setacea* (Gray) p. 816; JOHNSON, t. c.

## ACTINIARIA.

## GENERAL BIOLOGY.

Anatomy and histology of Jamaican Actiniaria; DUERDEN, Tr. Dublin Soc. (n. s.) vii, p. 133.

Development of *Urticina* (*Tealia*) *crassicornis* (O. F. M.) and *Actinia equina* L., p. 1; APPELLÖF, Bergens Mus. Aarbog 1900, No. 1.

Environment: Localities for Actinians—East Africa, p. 133; CARLGREN, 2 Beiheft Hamburg Anst. xvii.

Histology: Urticating cells of *Anemonia sulcata*; PRENANT, Arch. anat. micr. iii, pp. 101–121, pl. v.

Phylogeny: Phylogenetic Classification of the Actiniaria into 2 Tribes *Protantheæ* and *Nynantheæ* based upon the substitution for a peripheral ectodermal retractor apparatus of a more central mesenterial retractor apparatus. The Scyphistoma has nothing to do with the primitive Anthozoan promorph; CARLGREN, 2 Beiheft Hamburg Anst. xvii, pp. 29–33.

Physiochemistry: Traces of copper in *Anthea cereus* etc.; DUBOIS, Ann. Soc. Linn. Lyon 1900, pp. 93–97.

Teratology: Monstrous specimens of *Actinoloba dianthus*; DE KERVILLE, Bull. Soc. Rouen 1899 (1900), p. 245.

## DISTRIBUTION.

Bermudas: *Actiniaria*, p. 554; VERRILL, Tr. Connect. Ac. x.

Jamaica: *Actiniaria*, p. 133; DUERDEN, Tr. Dublin Soc. (n. s.) vii.

North America: Synopsis of *Actiniaria*, p. 747; PARKER, Amer. Natural. xxxiv.

Ethiopian Province: Description of 42 species of East African Actinozoa including 1 Cerianthid, 32 Actinians and 9 Zoanthids; CARLGREN, 2 Beiheft Hamburg Anst. xvii.



## SYSTEMATIC.

- Actinia mesembryanthemum* H. & Ehr. = *Paractis hemprichi* (Klunz.) = *Isactinia hemprichi* (Klunz.) Carlg.; CARLGREN, 2 Beiheft Hamburg Anst. xvii, p. 53.
- Actinodendron hansingorum*, n. sp., p. 118, Taf. ii, fig. 12, Zanzibar; CARLGREN, t. c.
- Actinoides sultana*, p. 63, Taf. i, figg. 12 & 13; *africana*, p. 64, Zanzibar, n. spp.; CARLGREN, t. c.
- Actinoporus elongatus*, n. sp., p. 283; CARLGREN, Ofv. Ak. Forh. 57.
- Actinotryx sancti-thomæ* (Duch. et Mich.), p. 555, pl. 68, fig. 5; VERRILL, Tr. Connect. Ac. x.
- Alicia sansibarensis*, n. sp., p. 48, Taf. i, figg. 6 & 7, Zanzibar, rare on sandy ground; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
- Anemonia manjano*, n. sp., p. 61, Taf. i, figg. 14 & 15, Zanzibar; CARLGREN, t. c.
- Antheopsis koseirensis* (Klunz.) Simon, p. 105 Taf. ii, figg. 17 & 18, Zanzibar; CARLGREN, t. c.
- Aureliana regalis* Andres, description, p. 280; CARLGREN, Ofv. Ak. Forh. 57.
- Boloceroideis mcarrichi* (Kwietn.), p. 36, Taf. i, figg. 10 & 11 and Taf. iv, figg. 15 & 16; *hermaphroditica*, n. sp., differing from type in being hermaphrodite, p. 38, both from Zanzibar; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
- Bunodeopsis globulifera*, n. sp., p. 559; VERRILL, Tr. Connect. Ac. x.
- Bunodes varidi*, n. sp., p. 66, Taf. i, fig. 17, Zanzibar; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
- Calliactis polypus* (Forsk.) Klunz., p. 75, Taf. i, figg. 3 & 4, Zanzibar; CARLGREN, t. c.
- Corynactis globulifera* (Ehr.), p. 40, text-fig. 1, Zanzibar; CARLGREN, t. c.
- Discosoma yuma*, p. 83, Taf. ii, figg. 14 & 15; *unguja*, p. 84, Taf. ii, figg. 6-9, Zanzibar, n. spp.; CARLGREN, t. c.
- Edwardsia*, differentiated from *Gonactinia*: CARLGREN, t. c. p. 34.
- Edwardsiella pudica* (Klunz.), p. 46, Taf. i, fig. 5, Zanzibar; CARLGREN, t. c.
- Gyrostoma tristis*, p. 56, Taf. i, figg. 1 & 2; *dubia*, p. 58; *stuhmanni*, p. 59, Taf. i, fig. 16, Zanzibar, n. spp.; CARLGREN, t. c.
- Helianthopsis mabrucki*, n. sp., p. 102, Taf. ii, fig. 21, Taf. iv, figg. 14a-e, Zanzibar; CARLGREN, t. c.
- Heteranthida*, nov. fam., p. 92; CARLGREN, t. c.
- Heterodactyla hemprichi* Ehr., p. 114, Taf. iv, figg. 7-10, Zanzibar; CARLGREN, t. c.
- Heterodactylinae*, n. s.-o., p. 138; DUERDEN, Tr. Dublin Soc. (n. s.) vii.
- Homodactylinae*, n. s.-o., p. 154; DUERDEN, t. c.
- Homostichanthida*, nov. fam., p. 138; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
- Homostichanthus*, n. g., p. 166, type *H. anemone* (Ellis); DUERDEN, Tr. Dublin Soc. (n. s.) vii.
- Homostichanthus duerdeni*, n. n. for *H. anemone*, p. 137; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
- Isactinia*, n. g. *badia*, n. sp., East Africa, p. 53; CARLGREN, t. c.
- Isoedwardsia*, n. g. differentiated from *Edwardsiella* but no complete diagnosis nor type species, p. 46; CARLGREN, t. c.
- Isophellia*, n. g. *sabulosa*, n. sp., p. 72, taf. i, figg. 8 & 9, Zanzibar; CARLGREN, t. c.
- Paradiscosoma*, n. n. for *Isaura*, type *P. neglecta* (Duch. & Mich.), p. 80; CARLGREN, t. c.

- Pentactinia*, n. g. *californica*, n. sp., p. 1166; CARLGREN, Ofv. Ak. Forh. 57.
- Phellia rufa*, n. sp., p. 557; VERRILL, Tr. Connect. Ac. x.
- P. decora* (H. & Ehr.), Klunz., p. 70, Taf. iii, figg. 5 & 6, Zanzibar; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
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- Cerianthus maia*, n. sp., Zanzibar; CARLGREN, 2 Beiheft Hamburg Anst. xvii, p. 27, Taf. iii, fig. 3.

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Commensalism of *Palythoa* and *Epizoanthus* with Pagurines, p. 279; ROULE, C.R. Ac. Sci. cxxxi.

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- Gemmaria tubulifera*, p. 126, Taf. v, fig. 2, vi, fig. 33, Tumbatu; *multisulcata*, p. 127, Taf. iii, fig. 1, v, fig. 3, vi, figg. 1 & 5, Zanzibar; *aspera*, p. 129, Taf. v, fig. 1, vi, fig. 2, Baui, n. spp.; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
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 Coral Skeleton. Nomenclature and Taxonomic Value, p. 4; GREGORY, Pal. Ind. (ser. ix) pt. ii.  
 Mesenteries and Septa of Madreporaria, their order of appearance; DUERDEN, Johns Hopkins Univ. Circ. xix, No. 146, p. 47.  
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*Seriatopora* galls caused by *Haplocarcinus marsupialis* Stimpson, described and figured; COLMAN, W. G. Brachyura from Torres Straits. Tr. Linn. Soc. London (2) viii, p. 45 and pl. 3, figg. 38-40.

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- Bermudas. *Madreporaria*, p. 551; VERRILL, Tr. Connect. Ac. x.  
 West Indies. Species of *Madrepora*; GREGORY, Ann. Nat. Hist. (7) vi.  
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## †RUGOSA.

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Carboniferous corals of Algeria; JOLEAUD, Mem. Ac. Vaucluse xix, p. 397.

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## XVII. SPONGIÆ.

BY

PROFESSOR E. A. MINCHIN.

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## INTRODUCTION.

I. The number of publications dealing with sponges recorded this year reaches the large total of 84, exclusive of reviews or abstracts. Of this number, however, about 16 were published previously to the year 1900, but after deducting these, the balance is still a heavy one for a single year. The list includes many publications of great interest in almost all branches of investigation.

II. Biology. MAAS (39) furnishes for the first time the much needed demonstration of what had become, for theoretical reasons, an almost certain proposition, namely that the flat epithelium lining the gastral cavity of the Sycons is not of "endodermal" origin, i.e. derived by flattening out of collar cells of the gastral layer, but arises from ingrowths of the dermal layer, while the gastral layer furnishes collar cells only. The author was further able to make some remarkable observations on the formation of spicules in these forms. SCHULZE (63) publishes the full account of his important observations on the histology of Hexactinellids, of which a preliminary account was recorded last year. It has been the author's good fortune to be the first who has had properly preserved material of these sponges in his hands, so that he has been in a position to give us a detailed description of their collar cells, hitherto unknown. TOPSENT (69, 70) maintains his remarkable statements that in *Clionidae* the incurrent and excurrent canals are in direct continuity, and not by way of the chambers as usually believed. He asserts that the chambers have no prosopyles, but are simply blind diverticula of the excurrent canals. As a proof of these propositions he points out that the pieces of calcareous matter cast out by the sponge in the process of its excavations are too large to pass through any prosopyles if they existed, and must travel direct from the incurrent to the excurrent system. But is it certain that the calcareous corpuscles, detached by the *Cliona* in so mysterious a fashion, pass first into the incurrent system? If so, this arrangement of the canal system is perhaps to be regarded as a special peculiarity of boring sponges, an adaptation to their mode of life. The observations of EVANS (15) on the formation of the gemmule of *Ephydatia*, are a remarkable contribution not only to our knowledge of the *Spongillina*, but also to the general biology of the cell. The scleroblasts which form the amphidiscs of the outer coat do so at some distance from their definitive position, which they attain by active migration, like so many ants, carrying their spicules with them. Original observations on the development and histology of Ascons will be found in MINCHIN (46, 47). Under physiology we have an important contribution to the subject of nutrition by ZEMLITSCHKA (81), and observations on pigments from MACMUNN (45), and TOPSENT (70).

III. Under the head of Geographical Distribution the most noteworthy feature is perhaps the contributions to our knowledge of Pacific sponge faunas by KIESCHNICK (26), KIRKPATRICK (27, 28), SCHULZ (60) and THIELE (68). TOPSENT (70) continues his valuable monograph of the sponges of the coasts of France by a description of the Hadromerina, and LAMBE (32) gives a list, complete to date, of sponges known from the coasts of Canada and Alaska. The only addition to our British Fauna is made by WALLER (72) who describes a new species, but since the author announces that "he intends to go no farther than Dr Bowerbank" in matters of classification and taxonomy, it is by no means improbable that this n. sp. may prove to be a synonym. The complete list of Hexactinellids from the Indian Ocean, worked out by Schulze, is given by ALCOCK (1). New freshwater sponges are described by EVANS (15) and MACKAY

(44), and WELTNER (74) gives an account of the Spongilline fauna of the Australian region.

Under the head of Palæontology, the most formidable contribution is the great monograph of the *Dictyospongiæ*, with its imposing array of new subfamilies, genera, and species, and its revolutionary system of nomenclature, by HALL & CLARKE (20), published in 1898, but not seen by any previous recorder. Lists of Cretaceous sponges of Gt. Britain are given by JUKES-BROWNE & HILL (25) and by ROWE (55); of Bohemia by ZAHÁLKA (78, 79); of the Silurian of Scotland by PEACH & HORNE (50). Other important palæontological works are those of HINDE (22), ROTHPLETZ (52, 53), and SCHRAMMEN (57).

IV. The most sensational novelty of this or of recent years is the remarkable form *Astrosclera*, discovered by Willey and described by LISTER (38), which, with a skeleton reported to consist of aragonite, and, in any case, composed of elements of most unusual form, is perhaps the representative of a new primary division of the sponges, though here placed, for convenience' sake, under the Calcarea.

MINCHIN (47, p. 111) made the suggestion that many fossil Pharetrone sponges would prove on further investigation to belong to the section Lithonina, hitherto only represented by the recent *Petrostroma schulzei* of Döderlein. Scarcely was the ink dry with which this prophecy was written, before a paper was published by HINDE (22, 23) describing several fossil genera, some new, some old, which were shown to be true Lithonina. In quick succession appeared a memoir by KIRKPATRICK (28) in which a species belonging to one of Hinde's new genera, *Plectroninia*, was described amongst a collection of recent sponges from Funafuti. Thus our knowledge of the Lithonina has advanced by very rapid strides during the past year. New Calcarea are also described by LAMBE (29, 31). Of Hexactinellids SCHULZE (61, 62, 63, 65) describes forms new and old from the Mediterranean, Red Sea, Arctic Ocean and Indian Ocean. Reference has already been made to the memoir of HALL & CLARKE (20), as an addition to our knowledge of fossil Hexactinellids, and to the works of KIESCHNICK (26), KIRKPATRICK (27, 28), LAMBE (31), SCHULZ (60), THIELE (68) and TOPSENT (70), for many additions to the systematic study of Demospongiæ. The following table is a summary of the new genera, species, etc., recorded below:—

|                 | New<br>genera | Altered<br>generic<br>names | New<br>species | New<br>varieties |
|-----------------|---------------|-----------------------------|----------------|------------------|
| Calcarea        | 2 + 2†        |                             | 11 + 6†        |                  |
| Hexactinellida  | 5 + 21†       | 3†                          | 11 + 80†       | 1†               |
| Demospongiæ     |               |                             |                |                  |
| (1) Tetraxonida | 2†            |                             | 27 + 8†        |                  |
| (2) Monaxonida  | 1             |                             | 46             | 3                |
| (3) Keratosa    | 1†            |                             | 5 + 1†         |                  |
| Incertæ Sedis   |               |                             | 1†             |                  |
| Total           | 8 + 26†       | 3†                          | 100 + 96†      | 3 + 1†           |

Under the Myxospongiida, Octactinellida, and Heteractinellida, there is nothing new to record.

Finally under the head of general treatises attention may be drawn to MINCHIN (47) and ZITTEL (82).

† Extinct forms.



## CORRIGENDA in Record of Spongiæ for 1899.

- p. 2. BEEDE (2) incorrectly cited ; see (4) of present Record.
- p. 3. HALL & CLARKE (18) incorrectly cited ; see (20) of present Record.  
 LISTER (23) was published in 1900 ; see (37) of present Record.
- p. 12. Under "Fossil Sponges" ; "*Somospongia*" should be *Somphospongia* (vide p. 25 infra) ; "*Shelleya*" should be *Stolleya* (vide p. 39 infra) ; "*Cephalorhaphidites*" should be *Cephalorhaphidites* (vide p. 40 infra).

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Paper or Work referred to.

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## II. BIOLOGY.

### A. EVOLUTION.

#### (i) *General Principles.*

Homoplasy in the skeleton of Lithonina and Lithistida. Two mechanical problems are solved in practically the same manner and independently, namely (1) the economization of energy in the production of water currents, and (2) the best disposition of rigid material to resist stresses in the organism; SOLLAS in discussion on HINDE (22).

#### (ii) *Relations of Sponges.*

Position of Sponges in the Animal Kingdom discussed; conclusion drawn that they are not Cœlentera, but that there are two possible views as to their origin, between which it is not possible to decide finally at



present, namely (1) that they are descended from Choanoflagellate ancestors, independently of other Metazoa, hence *Parazoa* Sollas, and (2) that they have a common origin with other Metazoa as far as the gastrula stage, after which they have evolved in a different direction, their germ-layers becoming reversed in position, hence *Enantiozoa* Delage; MINCHIN (47) pp. 158-161. Sponges regarded as *Parazoa*, one of the two primary branches of the Metazoa, the other being the *Enterozoa*; LANKESTER (33) pp. 1, 2.

Porifera classed as Cœlenterata; DYBOWSKI (13) p. 446.—As a sub-branch of the sub-kingdom Cœlenterata; ZITTEL (82) p. 41.

### (iii) *Phylogeny.*

Phylogeny of Sponges in General; MINCHIN (47) pp. 161, 162.—Sponges and Radiolarians form the only extensive Pre-Cambrian fauna: speculations as to the origin of Sponges from Protozoa; HUTTON (24) pp. 348, 349.

Phylogeny of Calcarea; MINCHIN (47) p. 109.

Phylogeny of Demospongiæ, with genealogical tree; KIESCHNICK (26) pp. 579-581.—Phylogeny of Demospongiæ; MINCHIN (47) pp. 162-164.—Descent and Affinities of the Oligosilicina (*Chondrosiuncæ*); THIELE (68) p. 65. [See also TOPSENT (70), B, iv, c (p. 16 infra).]

## B. MORPHOLOGY.

### (i) *General Accounts.*

The Morphology and Life History of Sponges in General; MINCHIN (47) pp. 2-85.—General Accounts of Sponge Organisation; HALL & CLARKE (20) pp. 14-17; ZITTEL (82) pp. 41-45.—Popular accounts of the Organisation of Sponges; FIELDER (16) & (17); PANKHURST (49).

### (ii) *External Characters.*

(a) **Attachment.**—In Sponges generally; MINCHIN (47) pp. 2 & 3.—Mode of attachment of Sponges, especially *Dictyospongiæ*: in *Thysanodictya* and *Phragmodictya* “by means of a frill or collar (*periloph*) encircling the truncated base”; HALL & CLARK (20) p. 17.

(b) **Form and Mode of Growth.**—In Sponges generally; MINCHIN (47) pp. 2-23.—Forms of Sponges, general account; HALL & CLARKE (20) p. 16.—Variations and Genetic Relations of Form in *Dictyospongiæ*; HALL & CLARKE (20) pp. 33-36.—Varieties of form and growth in *Clathrina coriacea* correlated with habitat; MINCHIN (46) pp. 110-119.—Polymorphism of *Cliona celata*, pp. 38-42, and *C. viridis*, pp. 89 & 93: they occur as boring forms, enveloping forms, and massive or raphyroid forms; TOPSENT (70) and (69) pp. 151 & 152.—Form varieties of *Hadromerina* generally, p. 13: of *Ficulina ficus*, p. 215: of *Suberites carnosus*, pp. 236 & 237: of *Tethyspira spinosa*, pp. 261 & 262; TOPSENT (70).—External Form and Appearance of Keratosa; SCHULZ (60) p. 528.

(c) **Colour.**—In Sponges generally; MINCHIN (47) pp. 24-26.—Colour varieties of *Clathrina coriacea*; MINCHIN (46) p. 120.—Colours of *Hadromerina*: generally due to zoonerythrin, and varies from pale yellow to orange red. It is in the smaller species, especially, that the colour may be distinctive, and shows the richest tones, vermilion, scarlet, green, blue, etc.; TOPSENT (70) pp. 14 & 15.—Colour variations of *Cliona vastifica*, p. 60: of *C. schmidtii*, p. 81: of *C. viridis*, p. 95: of *C. viridis*, var. *carteri*,

p. 100 : of *Hymedesmia bistellata*, p. 126 : of *Polymastia mammillaris*, p. 139 : of *Polymastia robusta*, p. 154 : of *Prosuberites longispina*, p. 175 : of *Terpios fugax*, due to presence or absence of invading Thallophytes, pp. 198 & 199 : of *Ficulina ficus*, p. 216 : of *Suberites domuncula*, p. 229, and *S. carnosus*, p. 238 : of *Mesapos stellifera*, p. 255 : of *Coppatias johnstoni*, p. 275 : of *Tuberella aaptos*, p. 293 : of *Tethya lyncurium*, p. 302 ; TOPSENT (70).—Colours of Keratosa ; SCHULZ (60) p. 528.

(d) **Consistence, Texture, Smell, etc.**—In Sponges generally, MINCHIN (47) p. 26.—Texture and consistence of Hadromerina ; TOPSENT (70) pp. 15 & 16.—Odour, like a laundry ("odeur de lessive"), of *Laxosuberites rugosus*, *Acanthella acuta*, *Plumohalichondria plumosa*, and *Stylorella columella*, p. 189: odour of sulphuretted hydrogen, in decomposing *Terpios fugax cærulea*, p. 203 : phosphoric odour in *Suberites domuncula*, p. 229 ; TOPSENT (70).

### (iii) *Anatomy of the Soft Tissues. Canal System.*

Of the Olynthus and of Sponges in general ; MINCHIN (47) pp. 27–37.

The Canal System of the Calcarea ; MINCHIN (47) pp. 92–100.—Anatomy of *Clathrina coriacea* ; MINCHIN (46).—Canal System of *Electroninia* ; HINDE (22) p. 56.—Anatomy and Canal System of *Astrosclera willeyana* ; LISTER (38) pp. 468–470.

Canal System of Hexactinellids ; MINCHIN (47) pp. 111–116.—Anatomy of *Aulocystis zitteli*, pp. 6 & 7, pl. ii, fig. 3, and *A. grayi*, pp. 2 & 3, pl. i, fig. 5 : of *Tretocalyx polæ*, p. 9, pl. iii, fig. 1 ; SCHULZE (62).—Anatomy of *Schaudinnia arctica*, pp. 87–93, pl. ii : of *Trichasterina borealis*, p. 102, pl. iv, figg. 1 & 2 : of *Scyphidium septentrionale*, p. 105, pl. iv, fig. 11 ; SCHULZE (63).

Canal System of Demospongiæ ; MINCHIN (47) pp. 125–130.—Anatomy and Canal System of *Cliona celata* ; the so-called exhalant and inhalant canals are believed to be in direct continuity, so that the distinction between these two sorts of canals is arbitrary and artificial. Doubt is thrown upon the existence of prosopyles in the chambers ; in any case the calcareous corpuscles detached by the sponge are too large to pass through them, and must go direct from the inhalant to the exhalant passages ; TOPSENT (70) pp. 47–52, and (69).—Anatomy and Canal System of *Polymastia mammillaris*, pp. 139–143 : of *P. robusta*, pp. 152–155 : of *Quasillina brevis*, pp. 161 & 162 : of *Prosuberites longispina*, pp. 175 & 176 : of *Ficulina ficus*, pp. 217 & 218 : of *Suberites domuncula*, p. 230 : of *S. carnosus*, pp. 239 & 240 : of *Rhizaxinella pyrifera*, p. 246 : of *Tuberella aaptos*, p. 291 : of *Tethya lyncurium*, pp. 303–306 ; TOPSENT (70).—Canal System of *Ephydatia blimbingia* ; EVANS (15) pp. 77 & 78.—Canal System of Keratosa ; SCHULZ (60) pp. 528 & 529.

### (iv) *Skeletal System.*

(a) **General Accounts.**—MINCHIN (47) pp. 37–43.

(b) **Material of the Skeleton.**—Composition of the skeleton of *Astrosclera* ; the inorganic constituent is aragonite and not calcite as in true Calcarea ; the organic basis agrees in staining properties with that of calcareous sponge spicules ; LISTER (38) pp. 463–465.

Nature of skeletal material of *Receptaculites* ; the specimens examined show no trace of organic structure but are composed of two replacements, calcite first and silica afterwards ; ETHERIDGE & DUN (14) p. 75.

(c) **Morphology and Development of Skeletal Elements.**—

Spicule formation and its relation to the crystalline nature of the spicule. In the formation of calcareous spicules [monaxons] two consecutive processes must be distinguished; (1) a purely organic, cellular activity, which determines the form; (2) an inorganic process of crystallization, which determines the contents, of the structures in question; MAAS (40).

Morphology of calcareous sponge spicules, pp. 101–103: development and phylogeny, pp. 107–109; MINCHIN (47).—Spicule formation in *Clathrina coriacea*; MINCHIN (46) pp. 135–138.—Spicule formation in *Sycandra setosa*. The monaxons arise each in a single mother cell, and there is never more than one cell on the smaller spicules of this class, but the large monaxons have numerous formative cells upon them, not derived from division of the mother cell, but from the dermal layer *de novo*. The first rudiment of the spicule is laid down very slowly within the cell, but as soon as it comes to project from the cell, it grows with great rapidity, apparently by a process of crystallization. The triradiates also arise each in a single mother cell as a concretion, but at a later stage they bear several formative cells. The quadriradiates are formed by addition of a fourth ray to a triradiate through the agency of cells of the dermal layer. Hence the triradiates of Sycons are formed differently from those of *Clathrinidae*, and similar calcareous spicules may have quite different origins and be phylogenetically independent of each other. The tri- and quadriradiates do not correspond in any way with the pores as regards number or position; MAAS (39) pp. 224–227.

Origin of the skeletal elements (spherules) of *Astrosclera*; each spherule originates in a single cell; with continued growth adjacent spherules come into contact, to the exclusion of the soft parts, and lose their spherical form and become polyhedral; LISTER (38) p. 465.

Morphology of Hexactinellid spicules; MINCHIN (47) pp. 116–118 and p. 120.—Morphology of the spicules of *Dictyospongiæ*, pp. 29–33, figs. 4–7; the term *clemes* employed for rods with a series of barbs along the sides, p. 20; HALL & CLARKE (20).

Morphology and Phylogeny of the spicules of Tetraxonida, pp. 130–135: of Monaxonida, pp. 137 & 138; MINCHIN (47). All tetraxon spicules of Tetractinellids to be considered as megascleres, all polyaxons as microscleres; THIELE (68) p. 64.—Skeletal structure and spiculation in *Hadromerina* generally. Siliceous sponges may be supposed to have possessed primitively only asters, certain of which increased in size, with reduction of the actines, to become megascleres, as in the calthropes of *Pachastrellidæ*. By further reduction originated the diactinal and monactinal monaxons; TOPSENT (70) pp. 18–20: spiculation of *Cliona celata*; tendency to reduction of spiculation in this species; TOPSENT (69) pp. 155–157, and (70) p. 43.

Formation of amphidiscs round the gemmule of *Ephydatia blembingia*. Each amphidisc is formed in a scleroblast in the tissues of the sponge body, and when it has attained its ultimate form, the scleroblast migrates with it in an amœboid manner towards the gemmule and pushes its way between the cells of the columnar layer which secretes the chitinous coat. The amphidiscs are placed in position in the protective coat of the gemmule, and the scleroblasts then become modified to form part of the intermediate layer of the protective coat; EVANS (15) pp. 92–94.

Spongion fibres, structure, pp. 42, 43 & 140, 141; formation and growth, pp. 46 & 47; filaments of *Hircinia*, pp. 142 & 143; MINCHIN (47); Spongion fibres; SCHULZ (60) p. 529.

Alleged occurrence of spongin in the intervals between the vertical and horizontal spicular bands in †*Hyphantenia* (*Dictyospongiæ*, Hexactinellida, Lyssacina); HALL & CLARKE (20) p. 188.

Spicules of Octactinellida and Heteractinellida; MINCHIN (47) pp. 155 & 156.



(d) **Skeletal Anatomy.**—Arrangement of the spicules in the skeleton of Calcarea ; MINCHIN (47) pp. 103–107.—Structure of the skeleton of Pharetrones ; the spherulitic structure probably of secondary origin, not indicating any relationship with Astrosclera ; LISTER (38) pp. 473–479.—Skeleton of Pharetrones ; ZITTEL (82) pp. 62 & 63.—Structure of the skeleton of Lithonina ; HINDE (22).—Structure and Arrangement of skeleton of *Astrosclera*, pp. 467 & 468 : comparison with that of Pharetrones, pp. 473–479 ; LISTER (38).

Arrangement of the skeleton of Hexactinellids ; MINCHIN (47) pp. 118–120.—Skeletal Arrangement in Hexactinellida, and especially in *Dictyospongiae*, with two figures [one original] ; HALL & CLARKE (20) pp. 17–20.—Structure of *Receptaculites australis* ; ETHERIDGE & DUN (14).

Arrangement of the skeleton of Tetraxonida, pp. 135–137 ; of Monaxonida, pp. 138–140 ; MINCHIN (47).—Changes in skeletal structure correlated with changes in external form by growth, in *Cliona celata* ; TOPSENT (70) p. 41.

Arrangement and phylogeny of Keratose skeletons ; MINCHIN (47) pp. 141–144.—Skeletal Anatomy of Keratosa ; SCHULZ (60) p. 529.

[N.B. Details of the spiculation and skeletal anatomy of individual species, such as are found in every systematic description, are not recorded separately here.]

## (v) Histology.

(a) **General Accounts.**—Histology of Sponges in General ; MINCHIN (47) pp. 43–63.

Histology of Calcarea ; MINCHIN (47) pp. 27–31 & pp. 107–109 : of *Clathrina coriacea* ; MINCHIN (46) : of *Astrosclera willeyana* ; LISTER (38) p. 469.

Histology of Hexactinellida ; MINCHIN (47) pp. 120 & 121 : of *Schaulinnia arctica* ; SCHULZE (63) pp. 97–99, pl. iii.

Histology of *Cliona celata* ; TOPSENT (70) pp. 45 & 46 and (69) : of *Cliona viridis* ; TOPSENT (70) p. 97 : of *Ephydatia multidentata* ; WELTNER (74) p. 521 : of Keratosa ; SCHULZ (60) pp. 529 & 530.

(b) **Histology of Special Organs or Classes of Cells.**—Nervous system : doubts thrown upon the existence of any differentiated nerve cells in sponges ; MINCHIN (47) pp. 46–48.

“Cellules sphéruleuses”, their importance for systematic determinations, even in dried specimens ; TOPSENT (70) pp. 45 & 46 : their probable homology with the porocytes of Calcarea ; MINCHIN (46) p. 135, and (47) p. 50, and p. 144.—“Cellules sphéruleuses” of *Cliona celata*, p. 42 and pp. 45 & 46 : of *C. schmidtii*, p. 81 : of *C. viridis*, p. 97 : of *C. viridis*, var. *carteri*, p. 101 : of *Spirastrella minax*, p. 109 : of *Polymastia mammillaris*, p. 143 : of *Quasillina brevis*, p. 162 : of *Prosuberites longispina*, p. 175 : of *Laxosuberites rugosus*, p. 187 : of *Rhizaxinella pyrifera*, p. 246 : two kinds, present in *Mesapos stellifera*, p. 255 : of *Tethyspira spinosa*, p. 259 : of *Tuberella aaptos*, p. 291 : of *Tethya lyncurium*, p. 306 ; TOPSENT (70).

Collar cells of *Ascandra falcata*, *Clathrina coriacea*, and *Leucosolenia complicata* ; MINCHIN (47) pp. 54–56, fig. 52 : of *Clathrina coriacea* ; MINCHIN (46) p. 133 : of *Astrosclera* ; LISTER (38) p. 469 : of *Schaulinnia arctica* ; SCHULZE (63) p. 98, pl. iii : of *Cliona celata*, united by their collars ; TOPSENT (69) pp. 159 & 168 ; (70) pp. 46 & 51.

## (vi) The Germ Layer Question.

The sponges composed of two layers, with archæocytes ; reasons against regarding the parenchymal tissues as mesoderm ; MINCHIN (47) p. 63.



## C. PHYSIOLOGY.

(i) **General Accounts.**—MINCHIN (47) pp. 85-92.

(ii) **Nutrition.**—Ingestion of solid particles by collar cells in *Sycandra raphanus*; only the collar cells take up suspended particles, and hand them on to cells of the parenchyma, if nutritious; if not they cast them out again into the water. The collar cells near the prosopyles are the first to ingest particles; ZEMPLITSCHKA (81).—Ingestion by collar cells and amœboid cells in *Cliona celata*; TOPSENT (69) p. 170.

(iii) **Respiration.**—Vacant.

(iv) **Secretion and Excretion.**—**Pigments, Ferments, etc.**—Purple pigments of *Suberites wilsoni* and *Polyopogon* [= *Poliopogon*] *gigas*; that of the former is "Spongioporphyrin" (Lankester), but that of the latter is quite different from spongioporphyrin; MACMUNN (45).—Pigment granules in the amœboid cells and in the collar cells of *Cliona vastifica* and *C. lobata*, pp. 60 & 73; pigment in the cellules sphéruleuses of *C. schmidtii*, p. 81: pigments of *Cliona viridis*, p. 95: of *Prosuberites longispina*, p. 175: of *Laxosuberites rugosus*, p. 186: (zoonerythrin) of *Ficulina ficus*, p. 216: of *Mesapos stellifera*, p. 255: of *Tethyspira spinosa*, p. 259: of *Tuberella aaptos*, pp. 291 & 293; TOPSENT (70).

(v) **Irritability, Contractility, etc.**—Contractility and irritability developed to a high degree in Hadromerina, p. 16: Contractility of *Tethya lyncurium*, pp. 303 & 304; TOPSENT (70).

(vi) **Individuality.**—Of sponges in general; MINCHIN (46) p. 119, and (47) pp. 89-91.—Of sponges, especially of *Dictyospongidae*; HALL & CLARKE (20) p. 16.

(vii) **Miscellanea.**—**Experimental Physiology.**—Sponge larvæ uninfluenced by the action of the constant current; no trace of galvanotaxis; CARLGREN (7) pp. 466 & 478.

## D. BIONOMICS.

(i) **General Accounts.**—MINCHIN (47) pp. 88 & 89.

(ii) **Special Habits.**—*Cliona celata*, its methods of perforating shells, rocks, etc.; it attacks the shells of living animals as well as dead ones, and does much damage to oysters, producing what is termed the *maladie du pain d'épices*; its effects upon the oysters, and remedies against the sponge; TOPSENT (69) pp. 152 & 153, 173 & 174; (70) p. 18 and pp. 36-38.

(iii) **Habitat.**—*Clathrina coriacea*; MINCHIN (46).—Mode of Occurrence of *Dictyospongidae*; HALL & CLARKE (20) pp. 37-41.—*Dictyospongidae*, "the sandy matrix on the surface of which their Devonian progenitors [i.e. of the Hexactinellida] lived indicates a comparatively shallow sea", HINDE in review.—Habitats of Hadromerina on French Coasts; TOPSENT (70).—*Cliona celata*; TOPSENT (69).

(iv) **Defence and Protection.**—Vacant.

(v) **Enemies of Sponges.**—Vacant.

(vi) **Parasitism and Commensalism.**—Symbiosis in sponges generally; in *Dictyospongidae* markings occur which appear to indicate the presence of a symbiotic Annelid; HALL & CLARKE (20) pp. 21 & 22.—

Peculiar basket-shaped bodies in *Ephydatia blembingia*, of uncertain nature: perhaps they are parasitic sponges; EVANS (15) pp. 74 & 75, footnote.—Occurrence of *Alpheus* in Sponges; DUERDEN (12) p. 613.—“*Alpheus*-like Crustacea”; CONANT (10) p. 25.—*Hymedesmia bistellata* occupied by *Stephanoscyphus mirabilis*, p. 128: Commensal algæ (*Beggiatoa*) in *Terpios fugax*, giving the sponge its normal blue colour, pp. 199 & 203: *Suberites domuncula*, commensal with *Pagurus*: with *Tritata gibbosa*, an Amphipod: and with *Stephanoscyphus mirabilis*, pp. 227–229; TOPSENT (70).

(vii) **Sponges as Geological Agents.**—Relation of Sponges to Flints; PANKHURST (49).—Mode of preservation of *Dictyospongiæ*; HALL & CLARKE (20) pp. 36 & 37.—Mode of preservation of *Receptaculites australis*; ETHERIDGE & DUN (14).

## E. REPRODUCTION AND DEVELOPMENT.

### (i) *Germ Cells, Fertilization.*

Oögenesis, Spermatogenesis, Maturation, and Fertilization, summary of present knowledge; MINCHIN (47) pp. 60 & 61.

### (ii) *Embryology.*

(a) **General Accounts.**—MINCHIN (47) pp. 67–85.

(b) **Early stages, larvae, and metamorphosis.**—Embryonic development of *Clathrina coriacea* and other Ascons: description of the larvæ and metamorphosis; MINCHIN (46).—Development of *Clathrina blanca*; MINCHIN (47) pp. 68–75.—Metamorphosis of the larva of *Sycandra setosa*, and its development up to the Ascon stage, pp. 218–228: development of *Sycandra raphanus* from the Ascon to the complete Sycon stage, pp. 228–236, pl. x, fig. 8, and pl. xii; MAAS (39).—Ova and embryos of *Astrosclera willeyana*; LISTER (38) p. 470, figs. 8, 9, 10.

Embryology of Demospongiæ; MINCHIN (47) pp. 144 & 145.—Reproduction of Hadromerina: occurrence of ova and embryos; TOPSENT (70) pp. 16 & 17.—Ova in *Cliona celata*; TOPSENT (70) p. 53 and (69) p. 171.—Ova of *Cliona vastifica*, p. 65: Ova and larvæ of *Cliona lobata*: some *Clionidæ* seem to be oviparous, others viviparous, p. 74: larvæ in *Alectona millari*, p. 26: ova in *Polymastia robusta*, p. 155: ova in *Ficulina ficus*, p. 221: ova and embryos of *Tethya lyncurium*, p. 312; TOPSENT (70).

(c) **Organogeny.**—Development of the Canal System in *Sycandra raphanus*: the flat epithelium lining the gastral cavity does not arise by flattening out of gastral collar cells, but is derived from the dermal layer, which grows in between the radial tubes and interrupts the primitive continuity of the gastral collared epithelium; MAAS (39) pp. 229–233.

### (iii) *Asexual Reproduction.*

(a) **Fission and Vegetative Budding.**—General Account: formation of free buds in Ascons; MINCHIN (47) pp. 63 & 64.

Budding in Hadromerina generally, pp. 17 & 18: external buds in *Pseudosuberites sulphureus*, pp. 169 & 170: budding in *Tethya lyncurium*, pp. 299–302; TOPSENT (70).

(b) **Germinal budding.**—General account of gemmule formation, MINCHIN (47) pp. 65–67.—Gemmules of *Hadromerina*, pp. 17 & 18 : of *Cliona vastifica*, their structure, pp. 65–67 : of *Prosuberites epiphytum*, p. 183 : of *Ficulina ficus*, p. 222 : of *Suberites domuncula*, p. 230 : gemmules (?) in *Tethya lyncurium*, pp. 301 & 305 ; TOPSENT (70).—Gemmules of *Ephydatia blembingia* ; their structure, pp. 78 & 79, and formation, pp. 81–103. Four classes of cells take part in the formation of the gemmule. (1) The reproductive portion of the gemmule is an aggregation of yolk-containing wandering cells, no other cells entering into its composition. (2) The chitinous coat is secreted by a layer of columnar cells and (3) the coat of amphidiscs by scleroblasts. (4) Trophocytes provide for the nutrition of these various cells. (2) and (4) pass back into the sponge body after fulfilling their functions ; EVANS (15).—Gemmules of *Ephydatia multidentata* ; WELTNER (74) p. 520.

## F. MISCELLANEA.

(i) **Technique.**—Methods for the study of Ascons ; MINCHIN (46) pp. 145–147.—Methods for studying the minute structure of *Astrosclera willeyana* ; LISTER (38) pp. 462 & 463.—Methods for obtaining and rearing Sycon larvæ, and for the preservation of the various stages, especially with a view to the study of spicule formation ; MAAS (39) pp. 217 & 218.—Methods for the study of *Cliona celata* and other siliceous sponges ; TOPSENT (69) pp. 157, 160, and 170.—Preserving methods for *Ephydatia blembingia* ; EVANS (16) p. 72.—Methods for working out fossil sponges in the Chalk ; ROWE (54).

(ii) **Economics.**—Regulation of Sponge Fisheries ; TORRALBAS (71).

(iii) **Bibliography.**—MAAS (43).

(iv) **History.**—Summary of previous knowledge of Mediterranean Hexactinellids ; SCHULZE (61) pp. 1–3. History of previous knowledge of gemmule formation, pp. 82–89, and criticism of earlier observers, pp. 96–103 ; EVANS (15).

## III. DISTRIBUTION.

### A. GEOGRAPHICAL.

#### α. MARINE.

(i) **General.**—Geographical Distribution of sponges in general ; MINCHIN (47), pp. 156–158.

(ii) **Atlantic Ocean and Adjacent Seas.**—British Coast, *Raphiodesma affinis*, n. sp. ; WALLER (72).—Belgian Coast : a few common sponges ; GILSON (19).—Coasts of France : list of *Hadromerina*, and the general distribution of the species ; TOPSENT (70) pp. 10–13.—Bay of Biscay : Coast of Asturias, near Gijon, *Gellius* sp. ; ORUETA (48).—Mediterranean Hexactinellids : *Hexactinella*? sp. and *Sympagella nux* ; SCHULZE (61).

Hudson Bay : *Phakellia*, *Reniera*, *Suberites*, *Craniella* ; LAMBE (30).—Coasts of N. E. Canada and Greenland : *Reniera*, *Gellius*, *Esperella*, *Iophon*, *Phakellia*, *Suberites*, *Tentorium*, *Craniella*, *Thenea*, *Leucosolenia*, *Sycon*, *Grantia*, *Leucandra*, *Heteropia*, *Amphoriscus*, in all 20 spp. of which 11 new ; LAMBE (31).—Coasts of Canada : complete list of sponge fauna, with general distribution of each species quoted, and bibliography ; LAMBE (32).—Beaufort, U.S.A. : common sponges ; WILSON (77) p. 350.

(iii) **Indian Ocean and Adjacent Seas.**—General list of Hexactinellids, compiled from Schulze [(57) Zool. Rec. 1894, (43) Zool. Rec. 1895, and (65), Present Rec.]; ALCOCK (1).—Hexactinellida: *Pheronema*, *Hyalonema*, *Lophophysema*, n. g., *Euplectella*, *Regadrella*, *Dictyaulus*, *Lophocalyx*, *Farrea*, *Aphrocallistes*, including 13 spp. of which 7 are new; SCHULZE (65).—Red Sea: Hexactinellids, *Aulocystis* spp. and *Tretocalyx*, n. g., *polce*, n. sp.; SCHULZE (62).

(iv) **Pacific Ocean and Adjacent Seas.**—Vancouver Island: *Leucandra taylori*, n. sp.; LAMBE (29).—Coasts of Canada and Alaska: Sponge fauna; LAMBE (32).—Western Pacific: *Astrosclera willegana* from Sandal Bay, Lifu, Loyalty Islands and Funafuti; LISTER (38).—Funafuti: Sponge Fauna, *Astrosclera*, *Plectroninia*, *Clathrina*, *Chondrilla*, *Corticium*, *Placinelopha*, *Placinaustrella*, *Erylus*, *Cliona*, *Dyscliona*, n. g., *Latrunculia*, *Agelas*, *Tedania*, *Chondropsis*, *Pachychalina*, *Luffariella*, *Psammopemna*, *Stelospongia*, *Polyfibrospongia*, in all 21 spp., of which 11 are new; KIRKPATRICK (28).—Sponges of Christmas Island: *Clathrina*, *Leucandra*, *Chondrosia*, *Chondrilla*, *Sidonops*, *Ecionema*, *Stelletta*, *Tetilla*, *Spirastrella*, *Pseudosuberites*, *Tethya*, *Hymeniacidon*, *Microciona*, *Iotrochota*, *Esperella*, *Desmacella*, *Stylotella*, *Rhizochalina*, *Gellius*, *Reniera*, *Petrosia*, *Hali-chondria*, *Euspongia*, *Spongelia*, in all 32 spp., of which 7 are new, and 2 n. varr.; KIRKPATRICK (27).—Thursday Island and Amboina, Keratosa: *Cacospongia*, *Carteriospongia*, *Euspongia*, *Hircinia*, *Spongelia*, 10 spp., of which 2 are new; SCHULZ (60).—Ternate: *Dercitus*, *Chondrilla*, *Chondrosia*, *Tetilla*, *Ecionemia*, *Penares*, *Psammastra*, *Stelletta*, *Erylus*, *Geodia*, *Sydropsis*, *Placospongia*, *Theonella*, *Scleritoderma*, *Coppatias*, *Jaspis*, *Holoxea*, *Tethya*, *Cliona*, *Spirastrella*, *Ciocalyptra*, in all 41 spp., of which 24 are new; THIELE (68).—Australia and Malay Archipelago: *Tetilla*, *Stelletta*, *Placospongia*, *Tethya*, *Spirastrella*, *Polymastia*, *Suberites*, *Chalina*, *Pachychalina*, *Phyllosiphonia*, *Siphonochalina*, *Toxochalina*, *Gellioides*, *Chondrocladia*, *Desmacella*, *Esperiopsis*, *Echinodictyum*, *Rhaphidophylus*, *Acanthella*, in all 31 spp., of which 27 are new; KIESCHNICK (26).—Victorian sponges, common shore forms, a popular account; FIELDER (16) and (17).—Japan: *Euplectella* sp.; TAKESHITA (67A).

(v) **Arctic Seas.**—Hexactinellids, *Schaudinnia arctica*, n. g., n. sp., *Trichasterina borealis*, n. g., n. sp., *Scyphidium septentrionale*, n. g., n. sp.; SCHULZE (63).

(vi) **Antarctic Seas.**—Vacant.

### β. FRESHWATER SPONGES.—SPONGILLINÆ.

(i) **Europe.**—Yorkshire: spicules of *Spongilla lacustris* and *fluviatilis* in sediments from various sources; STILES (67).—Chemnitz: *Ephydatia mülleri*, *Spongilla lacustris*, var. *lieberkühni*; HEMPEL (21).—Lakes of Finland: *Ephydatia fluviatilis*, *Spongilla lacustris*; LEVANDER (35) and (36).—Finland: *Ephydatia mülleri*, *Spongilla fragilis*, *S. lacustris*; STENROOS (66).—Alpine Lakes: *Ephydatia mülleri*, *Spongilla fragilis* and *lacustris*; ZSCHOKKE (83) pp. 73, 74.

(ii) **Asia.**—Siamese Malay States: *Ephydatia blembingia*, n. sp., from River Blembing; EVANS (15).

(iii) **Africa.**—Vacant.

(iv) **Australia.**—*Ephydatia multidentata*, *Spongilla fragilis*, and *Spongillid* sp. incert.; WELTNER (74).



(v) **America.**—Sable Island, Atlantic, 100 miles from Nova Scotia: Occurrence of a freshwater sponge, *Heteromeyenia macouni*, n. sp.; MACKAY (44).

## B. GEOLOGICAL.

## (i) GENERAL.

Distribution and range of fossil sponges in general; ZITTEL (82) pp. 65–67; MINCHIN (47) pp. 157 & 158.

## (ii) CAINOZOIC.

(a), (b), (c), (d). Vacant.

(e) *Oligocene* (Nummulitic) of Mattsee: *Spongia saxonica* and *Cylindrites spongioides*; FUGGER (18) p. 393.

(f) *Eocene* (Sparnacian) of Belgium: *Cliona erodens*; LERICHE (34).—*Eocene* of Victoria, Calcsponges: *Plectroninia halli*, n. g., n. sp., *Bactronella parvula* and *B. australis*, n. spp., *Tretocalia pezica*, n. g., n. sp.; HINDE (22).

## (iii) MESOZOIC.

(a) Vacant.

(b) *Cretaceous*: Gt Britain, Gault and Greensand, complete list of Sponges; JUKES-BROWNE & HILL (25) pp. 480 & 481.—White Chalk of Kent and Sussex: Sponges; ROWE (55) pp. 359–361.—Bohemia: Priesen Horizon, *Elasmostoma*, *Craticularia*, *Pleurostoma*, *Rhizopoterion*, *Ventriculites*, *Geodia*, *Siphonia*, *Chondrillopsis*, *Stylocordyla*, *Clione*, *Amorphospongia*, *Achilleum*, *Spongites*; ZAHÁLKA (78).—Bohemia: Teplitz Horizon, *Craticularia*, *Guettardia*, *Leptophragma*, *Pleurostoma*, *Camerospongia*, *Cyrtobolia*, *Cystispongia*, *Plocoscyphia*, *Pyrospongia*, n. g., *Tremabolites*, *Cephalites*, *Rhizopoterion*, *Ventriculites*, *Phymatella*, *Plinthosella*, *Thecosiphonia*, *Doryderma*, *Isoraphinia*, *Scytalia*, *Astrobolia*, *Chonella*, *Stichophyma*, *Verruculina*, *Amorphospongia*, *Scyphia*, *Tragos*, *Solidinodus*, *Achilleum*; ZAHÁLKA (79).—Bohemia: *Pleurostoma* and *Rhizopoterion*; ZELÍZKO (80).—Upper Senonian Tetractinellids: *Dercitus*, *Stolleya* (n. g.) *microtulipa*, n. sp., and *S. ornatissima*, n. sp., *Tethyopsis*, *Geodia cretacea*, n. sp., *Cephaloraphidites* (n. g.), *cavernosus*, n. sp., and *C. milleporata*, n. sp., *Ophiraphidites cylindricus*, n. sp., *O. infundibuliformis*, n. sp., and *O. tuberosus*, n. sp.; SCHRAMMEN (57).—Lower Cretaceous (Berrias-Stufe) of Bernese Oberland, *Spongelites fellenbergi*, n. g. et sp. (Keratosia); ROTHPLETZ (52) & (53).

(c), (d), (e). Vacant.

## (iv) PALÆOZOIC.

(a) *General*: Laurentian, Huronian, Algonkian, Cambrian, Ordovician and Silurian faunas reviewed; until the Cambrian period, Protozoa and Porifera alone show much diversity; HUTTON (24).

(b), (c). Vacant.

(d) *Coal Measures*: Kansas, *Somphospongia*, n. g. *multiformis* n. sp.; BEEDE (4).—Upper Carboniferous, Nebraska, *Amblysiphonella prosseri*, n. sp.; CLARKE (9).

(e) *Lower Carboniferous*: (Kinderhook Beds) *Dictyophyton* sp.; WELLER (73) p. 69.—Waverly, Burlington, and Keokuk Groups, *Dictyospongidae*; HALL & CLARKE (20) pp. 151–197.

(f) *Devonian*: Corniferous Rocks of Ohio, *Receptaculites*, *Stromatopora* [?], *Syringostroma* [?]; BOWNOCKER (5).—(Tentaculitenschiefer), *Receptaculites*; BURHENNE (6) p. 44.—*Dictyospongiæ*; HALL & CLARKE (20) pp. 58–62, 64–150.—Devonian Sponges in the American Museum of Natural History; WHITFIELD & HOVEY (76) pp. 190–193.—Helderbergian, N. America, *Hindia*, *Lysactinella*, *Receptaculites* and *Ischadites* spp.; ORISKANY, *Hindia*, sp.; SCHUCHERT (58).

(g) *Silurian*: Of Scotland, lists of Sponges; PEACH & HORNE (50) pp. 668, 686, 708.—(Niagara group), Princess Marie Bay and Summit, Cape d'Urville, Arctic regions, *Receptaculites pearyi*, n. sp.; WHITFIELD (75).—(Utica Slate), *Cyathodictya* and *Sphaerodictya*, pp. 24, 26; *Dictyospongia danbyi*, pp. 63 & 64 and p. 60; HALL & CLARKE (20).

(h) *Ordovician*: Of Minnesota, Saint Peter Sandstone, *Rauffella fucoida*, n. sp.; SARDESON (56).—Lower Silurian of Baffin Land, *Receptaculites* and *Ischadites*; SCHUCHERT (59) pp. 152 & 153.—Cambro-Silurian of Canada, *Coscinopora*, *Receptaculites*; BARLOW (3) pp. 121, 122, 298.

(k) Vacant.

(l) *Pre-Cambrian*: see III, B, iv, a.

#### IV. SYSTEMATIC.

##### A. PORIFERA, GENERAL.

The Porifera divided into three, possibly five classes, Calcarea, Hexactinellida, and Demospongiæ, to which perhaps should be added, as groups equal to the foregoing in systematic value, the Octactinellida and Heteractinellida of Hinde; MINCHIN (47). Divided into four subclasses, Myxospongiæ, Ceratospongiæ, Silicispongiæ and Calcispongiæ; ZITTEL (82).

[The systematic lists which follow are classified according to the arrangement adopted by MINCHIN (47).]

##### B. CALCAREA.

Calcarea in general, classification and list of genera and families; MINCHIN (47) pp. 109–111. Calcispongiæ, definition and characters; ZITTEL (82) pp. 62 & 63.

##### (i) HOMOCÆLA.

Diagnosis; MINCHIN (47) p. 110.

##### Family CLATHRINIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.

*Clathrina clathrus* O. S., figured; MINCHIN (47), p. 6, fig. 7. *C. coriacea* (Mont.), distribution and description of the varieties of form and colour, and of the organization and development of the sponge; MINCHIN (46): young specimens figured; MINCHIN (47) p. 5, fig. 2. *C. depressa* (Dendy), from Funafuti, 25–45 fathoms; KIRKPATRICK (28) p. 349. *C. lacunosa* Johnst., figured; MINCHIN (47) p. 8. *C. primordialis* (H.); KIRKPATRICK (27) p. 129. *C. reticulum* (O. S.), figured; MINCHIN (47) p. 6, fig. 6.

[The following species of "*Leucosolenia*" belong to the family *Clathrinidæ* as defined by MINCHIN (47).]

*Leucosolenia cancellata* Verrill, Strait of Belle Isle, 60 fathoms; Davis Strait, 60 fathoms; LAMBE (31) p. 27, pl. ii, figg. 5, 5a–e: general

distribution; LAMBE (32) p. 165. *L. pulcherrima* and *L. stipitata*; FIELDER (16) p. 69.

### Family LEUCOSOLENIIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.

*Leucosolenia complicata* (Mont.), and *L. lieberkühni* (O. S.), figured; MINCHIN (47) p. 5, figg. 3 & 4. *L. stolonifer*; FIELDER (16) p. 69. *L. variabilis* (H.), figured; MINCHIN (47) p. 5, fig. 5.

### (ii) HETEROCÆLA.

Diagnosis; MINCHIN (47) p. 110.

### Family SYCETTIDÆ.

Diagnosis of family and list of genera; MINCHIN (47), p. 110. *Sycones*, definition and characters of order; ZITTEL (82) p. 65.

*Sycon* seu *Sycandra*, *S. asperum* Lambe and *S. compactum* Lambe, distribution; LAMBE (32) pp. 165 & 166. *S. eglintonensis*, **n. sp.**, Davis Strait, 15 fathoms; LAMBE (31) pp. 29 & 30, pl. ii, figg. 6, 6a-e; LAMBE (32) p. 166. *S. gelatinosum*; FIELDER (16) p. 69. *S. mundulum*, **n. sp.**, Davis Strait, 10 and 60 fathoms; LAMBE (31) pp. 28 & 29, pl. iii, figg. 7, 7a-e; LAMBE (32) p. 166. *S. protectum* Lambe, redescribed, from Strait of Belle Isle, 60 fathoms, and west coast of Greenland; LAMBE (31) pp. 27 & 28, pl. i, figg. 4, 4a-j; LAMBE (32) p. 165: from Vancouver Island; LAMBE (29) p. 263. *S. raphanus*; FIELDER (16) p. 69: (*Sycandra*) *raphanus*, development from Ascon to Sycon stage; MAAS (39) pp. 228-236: observations on the ingestion of solid particles by the collar cells; ZEMLITSCHKA (81). *S. setosa* Lend., development of larva from fixation to Ascon stage; MAAS (39) pp. 218-228.

### Family GRANTIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.

*Grantia canadensis* Lambe, and *G. comorensis* Lambe, distribution; LAMBE (32) p. 166. *G. invenusta*, **n. sp.**, from Davis Strait, 60 fathoms; LAMBE (31) p. 32, pl. vi, figg. 14, 14a-f; LAMBE (32) p. 167. *G. monstrosa* Breitf., distribution; LAMBE (32) p. 166. *G. phillipsii*, **n. sp.**, from Davis Strait, 60 fathoms; LAMBE (31) pp. 30 & 31, pl. iv, figg. 9, 9a-i; LAMBE (32) p. 167.

*Leucandra* sp.; KIRKPATRICK (27) p. 129. *L. aspera* H., figured; MINCHIN (47) p. 9, fig. 12. *L. cumberlandensis*, **n. sp.**, from Cumberland Sound, 20 fathoms, and Davis Strait, 60 fathoms; LAMBE (31) pp. 34 & 35, pl. v, figg. 12, 12a-j; LAMBE (32) p. 167. *L. taylori*, **n. sp.**, from Vancouver Island; LAMBE (29) pp. 261 & 262, pl. vi: LAMBE (32) p. 167. *L. valida*, **n. sp.**, from Davis Strait, 10 fathoms; LAMBE (31) pp. 32 & 33, pl. iv, figg. 10, 10a-e, and pl. v, figg. 11, 11a-e; LAMBE (32) p. 167.

*Leuconia pyriformis* Lambe, distribution; LAMBE (32) p. 167.

### Family HETEROPIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.

*Heteropia rodgeri*, **n. sp.**, from Strait of Belle Isle, 60 fathoms; LAMBE (31) pp. 35 & 36, pl. vi, figg. 13, 13a-g; LAMBE (32) p. 168.

*Vosmaeropsis macera*; FIELDER (16) p. 69.

## Family AMPHORISCIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.

*Amphoriscus thompsoni*, n. sp., from Strait of Belle Isle, 60 fathoms; LAMBE (31) pp. 36 & 37, pl. iii, figg. 8, 8a-j; LAMBE (32) p. 168.

## Family PHARETRONIDÆ seu PHARETRONES.

Diagnosis of family *Pharetronidæ*, with two families *Dialytinæ* and *Lithoninæ*, and list of genera; MINCHIN (47) p. 110: definition of order *Pharetrones*; ZITTEL (82) p. 63: structure of the skeleton from the point of view of their relations to *Astrosclera*; LISTER (38) pp. 473 & 479.

(1) *Dialytinæ* (= *Dialytina* Rauff), sense restricted to denote subfamily of *Pharetronidæ*, as opposed to *Lithoninæ*; MINCHIN (47) pp. 109 & 110: used in sense of Rauff, to denote a subclass of the Calcarea, opposed to *Lithonina*; TOPSENT (69) p. 148.

+*Corymella* Z., genus defined, with figures of *C. quenstedti* Z., and its skeleton; ZITTEL (82) p. 64, and fig. 91; position of genus, and details of skeletal structure in *C. foraminosa*, *C. tetragona*, and *C. rugosa*; LISTER (38) pp. 476 & 477. *C. rugosa* Hinde and *C. socialis* Hinde; JUKES-BROWNE & HILL (25) p. 480.

+*Elasmostoma* From., genus defined, with figure of *E. acutimargo* Roem.; ZITTEL (82) p. 64, fig. 95. *E. sp.*; ZAHÁLKA (78) pp. 31, 92. *E. consobrinum* d'Orb., and *E. normannianum* d'Orb.; JUKES-BROWNE & HILL (25) pp. 68 & 480. *E. scitulum* Hinde; ROWE (55) p. 361.

+*Eudea* Lamx., genus defined; ZITTEL (82) p. 63.

+*Eusiphonella* Z., genus defined, with figures of *E. bronni* (Münst.); ZITTEL (82) p. 64, fig. 92.

+*Oculospongia tubifera* Goldf., figured; ZITTEL (82), p. 64, fig. 93.

+*Pachytilodia* Z., genus defined; ZITTEL (82) p. 64. *P. infundibuliformis* Goldf.; JUKES-BROWNE & HILL (25) p. 480.

+*Peronidella* (seu *Peronella*) Z., genus defined, with figures of *P. cylindrica* Münst. and *P. dumosa* From., includes *Siphonocelia* From. and *Polycelia* From.; ZITTEL (82) p. 63, figg. 89 & 90. *P. furcata* Goldf.; JUKES-BROWNE & HILL (25) p. 480.

+*Pharetrospongia strahani* Soll., structure of skeleton; LISTER (38) p. 477: JUKES-BROWNE & HILL (25) p. 480: ROWE (55) p. 361.

*Polycelia*, vide etiam *Peronidella*.

+*Rhapidonema* Hinde, genus defined, with figure of *R. farringdonense* Sharpe; ZITTEL (82) p. 64, fig. 96.

*Siphonocelia*, vide etiam *Peronidella*.

+*Somphospongia* n. g. of *Pharetrones*, for *S. multiformis*, n. sp. from Kansas Coal Measures; BEEDE (4) pp. 128-130, pl. xxxiii, figg. 1-10.

+*Stellispongia* d'Orb., genus defined, with figure of *S. glomerata* Quenst.; ZITTEL (82) p. 64, fig. 94: position of genus; LISTER (38) p. 476. *S. variabilis*, skeletal characters described and compared with *Astrosclera*; LISTER (38) pp. 474 & 475.

+*Trema(to)cystia orbigny* Hinde, p. 68 and p. 480; +*T. siphonioides* Mich., p. 480; JUKES-BROWNE & HILL (25).

(2) *Lithoninæ* (= *Lithonina* Rauff), placed as subfamily of *Pharetronidæ*; MINCHIN (47) p. 111: their relations to other Calcisponges, especially *Pharetrones*; HINDE (22).

+*Bactronella* Hinde, genus defined anew, and shown to belong to the *Lithonina*, intermediate between *Plectroninia* and *Petrostroma*; HINDE (22) p. 60. *B. australis*, n. sp., from Eocene rocks, Flinders, Victoria;



- HINDE (22) p. 62, pl. iv, figg. 12-19. +*B. parvula*, **n. sp.**, from Mount Martha or Mornington Beds (Eocene) near Melbourne; HINDE (22) pp. 60 & 61, pl. v.
- +*Holcospongia floriceps* Phill., possibly a Lithonine; HINDE (22) p. 58.
- Petrostroma* Död., comparison with *Plectroninia*; HINDE (22) p. 57.
- Plectroninia*, **n. g.** of Lithonina, diagnosed, p. 58, with type species +*P. halli*, **n. sp.**, from Eocene clays at Griffin's Farm, Moorabool river, N. W. of Geelong, and from Polyzoal Limestone of Eocene age, Flinders, Victoria; HINDE (22) pp. 51-57, pl. iii, figg. 1-83, pl. iv, figg. 1-11. *P. hindei*, **n. sp.**, from Funafuti, 50 fathoms; KIRKPATRICK (28) pp. 347-350, pl. xiii, figg. 1, *a-r*.
- +*Porosphaera*, cretaceous genus generally regarded as a Hydrocoralline, in reality closely allied to *Lithonina*; HINDE (22) p. 57. *P. sp.*; JUKES-BROWNE & HILL (25) p. 480. *P. globularis*; ROWE (55) pp. 299, 304 & 361. *P. pileolus*; ROWE (55) pp. 304 & 361. *P. urceolata* Phil., JUKES-BROWNE & HILL (25) p. 480. *P. woodwardi*; ROWE (55) pp. 304 & 361.
- +*Sestrostomella rugosa* Hinde, possibly a Lithonine; HINDE (22) p. 58.
- +*Tretocalia*, **n. g.** of Pharetrones, possibly of Lithonina, for *T. pezica*, **n. sp.**, from Eocene limestone of Flinders, Victoria; HINDE (22) pp. 62 & 63, pl. iv, figg. 20-29.

### Family ASTROSCLERIDÆ.

*Astroscleridæ*, **n. fam.**, defined; LISTER (38) p. 479.

*Astrosclera*, **n. g.** with type species *A. willeyana*, **n. sp.**, from Sandal Bay, Lifu, Loyalty Islands, 33 fathoms, and from Funafuti, 100 fathoms; LISTER (38): description, reprinted from Lister, of the Funafuti specimen; KIRKPATRICK (28) pp. 346 & 347; MINCHIN (47) pp. 166-168.

### HOMOCÆLA INCERTÆ SEDIS.

- +*Amblysiphonella* Steinm., the genus should perhaps be united with *Sebargasia*, p. 391: *A. prosseri*, **n. sp.**, from Upper Carboniferous (Webaunsee Formation), Nehawka and Weeping Water, Nebraska, pp. 389 & 390, pl. xxiii; CLARKE (9).
- +*Barroisia*, characters of genus, with figures of *B. anastomans* Mant., and its skeleton: includes *Ventriculites* Z., non Deifr. [*Verticillites*] and *Sphaerocalia* Steinm.; should be placed amongst Sycons; ZITTEL (82) p. 65, fig. 97.
- Sebargasia*, vide etiam *Amblysiphonella*.
- Sphaerocalia*, vide etiam *Barroisia*.
- +*Sphinctozoa* as a separate order; LISTER (38) p. 476: name used apparently for a genus, to be placed amongst Sycons; ZITTEL (82) p. 65; cf. CLARKE (9).
- +*Thaumastocalia* Steinm., notes on structure; LISTER (38) pp. 476 & 478: placed amongst Sycons; ZITTEL (82) p. 65.
- +*Verticillites*, note on structure; LISTER (38) p. 476; vide etiam *Barroisia*.

### C. HEXACTINELLIDA.

Hexactinellida in general, classification, with list of families and genera; MINCHIN (47) pp. 121-125: defined as order, structural features briefly described; ZITTEL (82) p. 54.

(i) *LYSSACINA*.

Diagnosis, as subclass, with two orders, *Hexasterophora* and *Amphidisco-phora*; MINCHIN (47) p. 121: definition and characters, as suborder; ZITTEL (82) pp. 54 & 55.

## Order HEXASTEROPHORA.

Diagnosis; MINCHIN (47) p. 121.

## Family EUPLECTELLIDÆ.

Diagnosis of family, and of subfamilies *Euplectellinæ*, *Holascinæ*, and *Tægerinæ*, and list of genera; MINCHIN (47) pp. 121 & 122.

"*Alcyoncellum corbicula*" Bwk., correctly *Corbitella corbicula*: "*A. speciosum*" Quoy et Gaimard, correctly *Corbitella speciosa*; SCHULZE (64).

*Corbitella* Gray, 1867, has priority over *Habrodictyon* Wyville-Thomson, 1868: *C. speciosa* Quoy et Gaimard, and *C. corbicula* Bwk., history and synonymy of the species, the two species perhaps identical; SCHULZE (64).

*Dictyaulus elegans* F. E. S., from S.S.W. of Cape Comorin, 1316 metres, redescended; SCHULZE (65) pp. 34 & 35.

*Euplectella* sp.; TAKESHITA (67A). *E. regalis*, n. sp., allied to *E. imperialis* Ijima, from Andamans, 741 meters depth; SCHULZE (65) pp. 24-30, pl. vi, figg. 1-9, diagnosis, p. 43.

*Habrodictyon* (-um) Wyville-Thomson, 1868, gives way to *Corbitella* Gray, 1867; SCHULZE (64).

*Regadrella decora*, n. sp., a species with "oxytetrasters" similar to those found in *R. okinoseana* Ijima, to which it is closely allied; from S.W. of Cape Comorin, 787 meters; SCHULZE (65) pp. 30-34, pl. vi, figg. 10-18, diagnosis, p. 43.

## Family HERTWIGIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 122.

## Family ASCONEMATIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 122.

*Sympagella nux* O. S., from Mediterranean, 414 and 444 meters; SCHULZE (61) pp. 3-7, pl. i, figg. 8-20.

## Family ROSSELLIDÆ.

Diagnosis of family, with sub-families *Leucopsacinæ*, *Lanuginellinæ*, *Rossellinæ* and *Acanthascinæ*, and list of genera; MINCHIN (47) p. 122.

*Lophocalyx spinosa*, n. sp., from W. of Andamans, 436-531 meters; SCHULZE (65) pp. 35-38, pl. vii, diagnosis, pp. 43 & 44.

*Rhabdocalyptus dawsoni* Lambe, distribution; LAMBE (32) p. 165.

*Schaudinna*, n. g. [nom. nud. (33) Zool. Rec. 1899] of *Rossellidæ*, sub-fam. *Rossellinæ* for *S. arctica*, n. sp., [nom. nud. 1899 l. c.] from Arctic Ocean, 1000 meters; SCHULZE (63) pp. 87-100, pl. i, figg. 1-6, pls. ii & iii, diagnosis, p. 107.

*Scyphidium*, n. g. [nom. nud. (33) Zool. Rec. 1899] of *Rossellidæ*, sub-fam. *Rossellinæ* for *S. septentrionale*, n. sp., [nom. nud. 1899 l. c.] from Arctic Ocean, 1000 meters; SCHULZE (63) pp. 104-107, pl. iv, figg. 11-17, diagnosis, p. 108.

*Staurocalyptus dowlingii* Lambe, distribution; LAMBE (32) p. 165.

*Trichasterina*, n. g. [nom. nud. (33) Zool. Rec. 1899] of *Rossellidæ*, sub-

fam. *Rossellinæ* for *T. borealis*, **n. sp.** [nom. nud. 1899, l. c.], from Arctic Ocean, 1000 meters; SCHULZE (63) pp. 100–104, pl. i, figg. 7, 8, 9, pl. iv, figg. 1–10, diagnosis, pp. 107 & 108.

## Order AMPHIDISCOPHORA.

Diagnosis; MINCHIN (47) p. 122.

### Family HYALONEMATIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 123.

*Hyalonema lamella*, **n. sp.**, described from fragments of not absolutely certain systematic position, dredged S.W. of Cape Comorin, at 787 and 1530 meters, pp. 15–19, pl. iii, diagnosis, p. 42: *H. martabanense*, **n. sp.**, from Bay of Martaban, 1171 meters, pp. 12–15, pl. ii, diagnosis, p. 41: *H. masoni*, F. E. S., from Andamans, 911 meters, redescribed, p. 8: *H. rapa*, **n. sp.**, from Bay of Bengal, 1109 meters, pp. 9–11, pl. i, diagnosis, p. 41: SCHULZE (65).

*Lophophysema* **n. g.** of *Hyalonematidæ* for type *L. inflatum*, **n. sp.**, from W. of Andamans, 911 meters; SCHULZE (65) pp. 19–23, pls. iv & v, diagnosis, pp. 42 & 43.

*Pheronema raphanus* F. E. S., fully described, from Andamans, 316–531 meters; SCHULZE (65) pp. 4–7, 2 figg.: figured by CHUN (8) p. 477.

*Poliopogon gigas*; MACMUNN (45) pp. 342–344.

+*Pyritonema*, genus defined; ZITTEL (82) p. 55.

“*Semperella*, **n. sp.**”, figured; CHUN (8) pp. 478 & 479.

## Extinct Families of LYSSACINA.

### Family PROTOSPONGIDÆ.

Family defined; ZITTEL (82) p. 55: list of genera; MINCHIN (47) p. 123.

+*Protospongia*, sp.; PEACH & HORNE (50) pp. 668, 708. +*P. rhenana* Schlüt., is a Dictyosponge of uncertain position; HALL & CLARKE (20) p. 68.

### Family DICTYOSPONGIDÆ.

Definition of the family, p. 29; structure, pp. 29–41; affinities, pp. 22–29; bibliography, pp. 41–51; classification, with seven sub-families, pp. 52 & 53; synoptic list of genera and species, pp. 54–57; distribution, pp. 58–62; [the generic name *Dictyophyton* Hall 1863, is abolished on the ground that it was given under the erroneous supposition that these organisms were plants; the species of *Dictyophyton* are scattered amongst various genera new and old, the type sp. *D. newberryi* Hall, being placed under *Thammodictya* Hall; see also HINDE in review]: HALL & CLARKE (20): family defined; ZITTEL (82) p. 55.

(i) *Dictyospongineæ*, **n. sub-fam.** for genera *Dictyospongia*, (?) *Lysactinella*, *Hydriodictya*, *Prismodictya*, *Gongylospongia*, *Hydnoceras*, (?) *Tylodictya*, *Helicodictya*, *Rhabdosispongia*, *Ceratodictya*, *Clathrospongia*, *Lebedictya*, *Lyrodectya*, (?) *Mastodictya*, and *Botryodictya*, defined; HALL & CLARKE (20) p. 52.

+*Botryodictya* **n. g.** for *Dictyophyton ramosum* Lesquereux, defined, p. 111; *B. (or Tylodictya)* sp. [sic], p. 114; *B. ramosa* Lesq., pp. 111–114, pl. xiii, figg. 1–8; both from Devonian, New York: HALL & CLARKE (20).

- +*Ceratodictya*, **n. g.**, defined, p. 117; type species *C. annulata* (*Dictyophyton annulatum* Hall), Devonian, N. America, redescribed, p. 120, pl. xxii, figg. 3-6; *C. centetu*, **n. sp.**, Devonian, New York, pp. 120 & 121, pl. xli, figg. 1-5; *C. carpenteriana*, **n. sp.**, Devonian, N. America, pp. 117 & 118, pl. xlii, fig. 1, pl. xliii, figg. 1-3; *C. cincta* Hall, redescribed, Devonian, Pennsylvania, pp. 118 & 119, pl. xxii, figg. 7-9; *C. zonata*, **n. sp.**, Devonian, Pennsylvania, p. 119, pl. xli, fig. 6; HALL & CLARKE (20).
- +*Ceratodictya annulata* Hall; WHITFIELD & HOVEY (76) p. 190.
- +*Clathrosporgia* Hall; genus defined, pp. 121 & 122; type species *C. abacus* Hall, Carboniferous, Pennsylvania, redescribed, p. 153, pl. xlix, figg. 5-8; *C. caprodonta*, **n. sp.**, Carboniferous, Ohio, p. 154, pl. 1, figg. 8 & 9; *C. (?) desmia*, **n. sp.**, Devonian, New York, p. 125, pl. xxv, fig. 3; *C. fenestrata* Hall, Devonian, New York, redescribed, pp. 122 & 123, pl. xiv, fig. 2, pl. xxv, fig. 5; *C. (?) hamiltonensis* Hall, from Hamilton Shales, Canandaigua Lake, New York, redescribed, pp. 66 & 67, pl. xiv, fig. 1; *C. (?) irregularis* Hall, from Devonian, New York, redescribed, pp. 124 & 125, pl. xv, figg. 6 & 7; *C. (?) tomaculum* Hall, Devonian, New York, redescribed, pp. 123 & 124, pl. xviii, figg. 5 & 6, pl. xxi, fig. 11; *C. vascellum* Hall, Devonian, New York, redescribed, p. 123, pl. xxi, fig. 12, pl. xxv, fig. 4: HALL & CLARKE (20).
- +*Clathrosporgia fenestrata* Hall; WHITFIELD & HOVEY (76) p. 190.
- +*Dictyospongia*, **n. g.**, defined with type species *D. sceptrum*, p. 72; *D. almondensis*, **n. sp.**, from Chemung Group, Devonian, New York, pp. 76 & 77, pl. xlv, fig. 1, text-fig. 13; *D. (?) bacteria*, **n. sp.**, from Chemung Group, Devonian, N. America, p. 77, pl. xxxviii, figg. 7 & 8; *D. charita*, **n. sp.**, from Chemung Group, Devonian, New York, pp. 74 & 75, pl. xv, fig. 4; *D. cylindrica* Whitfield, Carboniferous, Indiana, redescribed, p. 166, pl. lv, fig. 3, pl. lxi, fig. 6, text-fig. 22; *D. danbyi* (McCoy), from Silurian, redescribed, pp. 63 & 64, text-fig. 10; *D. eumorpha*, **n. sp.**, from Chemung Group, Devonian, New York, p. 75, pl. xv, figg. 1-3; *D. haplea*, **n. sp.**, Portage Sandstones, New York (Devonian), p. 68, pl. xxxiii, fig. 1; *D. lophiura*, **n. sp.**, from Chemung Group, Devonian, New York, p. 74, pl. xv, fig. 5; *D. marcella* Clarke, from horizon of Marcellus Shales, Hamilton Group, Livonia, New York, redescribed, pp. 65 & 66, pl. xli, figg. 8 & 9, text-fig. 11; *D. morini* Barrois, Devonian, Brittany, redescribed, p. 147, pl. xxvi, figg. 1 & 2; *D. (Mastodictya) osculata*, **n. sp.**, Carboniferous, Indiana, pp. 167 & 168, pl. lvi, fig. 6, text-fig. 22; *D. sceptrum* Hall, from Chemung Group, Devonian, North America, redescribed, pp. 73 & 74, pl. xiv, figg. 3-6, pl. xv, figg. 8 & 9, pl. xvi, figg. 3 & 4, pl. xxvii, fig. 3, pl. xxxvi, fig. 7; *D. siraea*, **n. sp.**, from Chemung Group, Devonian, New York, pp. 75 & 76, pl. xlii, figg. 4 & 5; *D. stylina*, **n. sp.**, Carboniferous, Indiana, p. 167, pl. lvi, fig. 2; HALL & CLARKE (20).
- +*Gongylospongia*, **n. g.**, defined, for type species *G. marshi*, **n. sp.**, from Devonian, New York; HALL & CLARKE (20) pp. 92-95, text-fig. 14-17.
- +*Helicodictya*, **n. g.**, defined, for type species *H. trypania*, p. 114; *H. (?) concordia*, **n. sp.**, pp. 115 & 116, pl. xxvii, fig. 2; *H. (?) scio*, **n. sp.**, p. 116, pl. xxvii, fig. 1; *H. trypania*, **n. sp.**, pp. 114 & 115, pl. xxii, figg. 1 & 2; all from Devonian, New York: HALL & CLARKE (20).
- +*Hydnoceras* Conrad, defined, for type species *H. tuberosum* Conrad, p. 96; *H. sp.*, Devonian, New York, p. 111, pl. viii, fig. 3; *H. anthracis*, **n. sp.**, Devonian, New York, pp. 109 & 110, pl. ii, fig. 8, pl. vi, figg. 1 & 2, pl. xxxiii, figg. 8 & 9; *H. avoca*, **n. sp.**, Devonian, New York, pp. 103 & 104, pl. ii, figg. 1, 3, pl. ix, fig. 3, pl. x, fig. 1, pl. xi, fig. 1; *H. barroisi*, **nom. nov.** for *Dictyophyton tuberosum* Barrois, Devonian, Brittany, redescribed, pp. 147 & 148, pl. xlvi, figg. 3 & 4; *H. bathense*, **n. sp.**, from Devonian, New York, pp. 101 & 102, pl. iii,



- fig. 3, pl. viii, fig. 4, pl. ix, fig. 1; *H. botrædema*, **n. sp.**, Devonian, New York, pp. 102 & 103, pl. ii, fig. 4; *H. eumeces*, **n. sp.**, Devonian, New York, pp. 110 & 111, pl. xii, figs. 1-3; *H. eutheles*, **n. sp.**, from Portage and Chemung Groups, Devonian, N. America, p. 70 and pp. 105 & 106, pl. viii, figs. 5 & 6, and pl. xxxiii, fig. 7; *H. gracile*, **n. sp.**, from Portage Sandstone, New York, pp. 70 & 71, pl. xxxiii, figs. 3 & 4; *H. hypastrum*, **n. sp.**, Devonian, New York, p. 105, pl. vii, fig. 1; *H. jaumontense*, **n. sp.**, Devonian, Brittany, pp. 148 & 149, pl. xlvii, figs. 5 & 6; *H. legatum*, **n. sp.**, from Portage Group, N. America, pp. 69 & 70, pl. xxxiii, figs. 5 & 6; *H. lutheri*, **n. sp.**, Devonian, New York, pp. 107 & 108, pl. viii, figg. 7-10; *H. multinodosum*, **n. sp.**, Devonian, New York, p. 106, pl. xxxix, fig. 1; *H. nodosum* Hall, from Devonian, New York, p. 109, pl. ii, fig. 2; *H. phymatoides*, **n. sp.**, Devonian, New York, pp. 104 & 105, pl. vi, figg. 4 & 5, pl. xxxvii, fig. 3; *H. rhopalum*, **n. sp.**, Devonian, New York, pp. 107 & 108, pl. xxxvii, figg. 1 & 2; *H. tuberosum*, Conrad, from Devonian, redescribed, pp. 97-101, pl. ii, figg. 5-7, pl. iii, figg. 1, 2, 4, pl. iv, figg. 2-4, pl. v, figg. 3 & 4, pl. vi, fig. 3, pl. vii, figg. 2 & 3, pl. viii, figg. 1 & 2, pl. xxxviii, figg. 1 & 2; *H. tuberosum*, var. *glossema*, **n. var.**, p. 101, pl. vii, figg. 4 & 5, pl. ix, fig. 2; *H. variable*, **n. sp.**, Devonian, New York, pp. 108 & 109, pl. xxxvi, fig. 1, pl. xxxvii, figg. 4-6: HALL & CLARKE (20).
- +*Hydnoceras nodosum* Hall, and +*H. tuberosum* Conrad; WHITFIELD & HOVEY (76) p. 192.
- +*Hydriodictya*, **n. g.**, defined, with type species *Dictyophyton patulum* Hall, p. 77; *H. cylis*, **n. sp.**, pp. 78 & 79, pl. v, figg. 1 & 2, pl. xvi, fig. 2, pl. lv, fig. 7; *H. nephelia*, **n. sp.**, p. 79, pl. xxi, fig. 10; *H. patula* Hall, redescribed, p. 78, pl. iv, fig. 1; all from Chemung Group, Devonian, New York: HALL & CLARKE (20).
- +*Lebedictya*, **n. g.**, defined, p. 169; type species *L. crinita*, **n. sp.**, Carboniferous, Indiana, pp. 169 & 170, pl. lviii, figg. 1 & 2, pl. lix, figg. 1 & 2, pl. lxi, fig. 5; HALL & CLARKE (20).
- +*Lyrodictya* Hall, genus defined, type *L. romingeri*, p. 170; *L. (?) burlingtonensis* Hall, Carboniferous, Iowa, redescribed, pp. 165 & 166, pl. liii, fig. 6; *L. romingeri* Hall, Carboniferous, Indiana, redescribed, pp. 170-172, pl. lvi, fig. 1, text-fig. 25: HALL & CLARKE (20).
- +*Lysactinella gebhardi* Girty and +*L. perelegans* Girty from Devonian; HALL & CLARKE (20) pp. 64 & 65: SCHUCHERT (58) p. 278.
- +*Mastodictya*, **n. g.**, suggested for *Dictyospongia osculata*, q.v.; HALL & CLARKE (20), pp. 167 & 310.
- +*Prismodictya*, **n. g.**, defined, for type species *Dictyophyton telum* Hall, p. 79; *P. allegania*, **n. sp.**, pp. 84 & 85, pl. xx, fig. 4; *P. amicitiae*, **n. sp.**, pp. 87 & 88, pl. xxxvi, figg. 2-4; *P. autophia*, **n. sp.**, p. 88, pl. xx, figg. 7 & 8, pl. xxxiv, figg. 4 & 5, pl. xli, fig. 7; *P. baculum* Hall, redescribed, pp. 81 & 82, pl. xviii, figg. 1-3; *P. banano*, **n. sp.**, p. 87, pl. xvii, fig. 2; *P. cercidea*, **n. sp.**, p. 89, pl. xx, figg. 1-3, pl. xlii, fig. 3; *P. choanea*, **n. sp.**, p. 85, pl. xix, figg. 1-3, pl. xxvii, fig. 5, pl. xxxv, fig. 6; *P. cithara*, **n. sp.**, p. 90, pl. xxxv, figg. 1-3, pl. xxxvi, fig. 5; *P. conradi* Hall, redescribed, pp. 91 & 92, pl. xviii, fig. 4, pl. xix, figg. 5 & 6; *P. corymbia*, **n. sp.**, p. 86, pl. xvii, fig. 11; *P. filitextilis* Hall, redescribed, pp. 86 & 87, pl. xxi, fig. 7, pl. xxvii, fig. 4; *P. narthecia*, **n. sp.**, p. 90, pl. xxxv, figg. 4 & 5; *P. palea*, **n. sp.**, p. 69, pl. xxxiii, fig. 2; *P. parallela* Hall, redescribed, pp. 82 & 83, pl. xix, fig. 4, pl. xx, fig. 6, pl. xxi, figg. 8 & 9, pl. xxxv, fig. 9; *P. polyhedra*, **n. sp.**, pp. 168 & 169, pl. lv, figg. 1 & 2; *P. prismatica* Hall, redescribed, pp. 83 & 84, pl. xvii, fig. 1, pl. xxi, figg. 1-6, pl. xlii, fig. 6; *P. ptionia*, **n. sp.**, pp. 88 & 89, pl. xxxiv, fig. 3; *P. spectabilis*, **n. sp.**, p. 82, pl. xx, fig. 5; *P. telum* Hall, p. 80, pl. xvii, figg. 3-10, pl. xxxv, figg. 7 & 8, pl. xlii, fig. 2; all from Devonian, N. America: HALL & CLARKE (20).

- +*P. filitextilis* Hall and +*P. parallela* Hall; WHITFIELD & HOVEY (76) p. 192.
- +*Rhabdosispongia*, **n. g.**, defined, p. 116; type species *R. (Dictyophyton) amalthæa* Hall, redescribed, from Devonian, Pennsylvania, pp. 116, pl. xvi, fig. 1; *R. condroziana*, **n. sp.**, from Devonian, Brittany, pp. 149 & 150, pl. xlvii, figg. 1 & 2: HALL & CLARKE (20).
- +*Tylodictya*, **n. g.** defined, with type species *P. warrenensis*, p. 151; *T. (?) tenuis* Hall, pp. 152 & 153, pl. liii, figg. 4 & 5; *T. warrenensis*, **n. sp.**, pp. 151 & 152, text-figg. 18-20; both from Carboniferous, Waverley Sandstone, Pennsylvania: HALL & CLARKE (20).

(ii) *Thysanodictyinae*, **n. sub-fam.** for genera *Thysanodictya*, *Arystodictya*, *Phragmodictya*, (?) *Griphodictya*, and *Achleodictya*, defined; HALL & CLARKE (20) p. 52.

- +*Achleodictya*, **n. g.**, defined, with type *A. marsipus*, p. 177; *A. (?) eccentrica* Hall, p. 179, pl. liv, figg. 1 & 2; *A. marsipus*, **n. sp.**, pp. 178 & 179, pl. lv, figg. 4 & 5, pl. lx, figg. 3-5, pl. lxi, figg. 1-3, pl. lxviii, figg. 7 & 8, text-figg. 31 & 32; both from Carboniferous, Indiana: HALL & CLARKE (20).
- +*Arystodictya*, **n. g.**, defined, p. 136; type species *A. elegans*, **n. sp.**, pp. 136 & 137, pl. xli, fig. 10, pl. xlii, fig. 7; *A. nodifera*, **n. sp.**, p. 137, pl. xli, fig. 11; both from Devonian (Chemung Group), New York: HALL & CLARKE (20).
- +*Griphodictya*, **n. g.**, defined, with type species *G. epiphanes*, **n. sp.**, Carboniferous, Indiana; HALL & CLARKE (20) pp. 179-181, pl. lv, fig. 6, text-fig. 63.
- +*Phragmodictya* Hall, defined, p. 172; type species, *P. catilliformis* Whitfield, pp. 173-176, pl. lxiv, figg. 1-5, pl. lxv, figg. 1 & 2, pl. lxvi, figg. 1-9, pl. lxvii, figg. 1-4, pl. lxviii, figg. 1-4, text-figg. 26-30; *P. (?) crebristriata* Hall, p. 176, pl. lxi, fig. 4; *P. (?) lineata* Hall, pp. 176 & 177, pl. lxviii, fig. 5; *P. patelliformis* Hall, p. 176, pl. lxv, fig. 3; all from Carboniferous, Indiana: HALL & CLARKE (20).
- +*Thysanodictya*, **n. g.**, defined, with type species *Dictyophyton halli* Hall, p. 125; *T. apleta*, **n. sp.**, Devonian, N. America, p. 135, pl. xxvi, fig. 1, pl. xxvii, fig. 8; *T. edwin-halli*, **nom. nov.** for *Dictyophyton halli* Hall, Devonian, New York, redescribed, pp. 126 & 127, pl. xxiv, figg. 1-9; *T. expansa* Hall, Devonian, Pennsylvania, redescribed, pp. 154 & 155, pl. liii, fig. 3; *T. hermenia*, **n. sp.**, Devonian, New York, pp. 133 & 134, pl. xxvii, fig. 7, pl. xxix, fig. 2, pl. xl, figg. 1-3; *T. johnstoni*, **n. sp.**, Devonian, New York, pp. 130 & 131, pl. xxiii, figg. 7 & 8; *T. poecilus*, **n. sp.**, Devonian, New York, pp. 127 & 128, pl. xxiv, figg. 10 & 11; *T. quasillum*, **n. sp.**, Devonian, N. America, pp. 131 & 132, pl. xxxviii, figg. 3 & 4; *T. randalli* Hall, Devonian, Pennsylvania, redescribed, pp. 129 & 130, pl. xxiv, fig. 12; *T. rudis* Hall, Devonian, N. America, redescribed, pp. 128 & 129, pl. xix, fig. 7, pl. xxiii, figg. 1-6; *T. saccus*, **n. sp.**, Devonian, New York, p. 130, pl. xxv, figg. 1 & 2; *T. scyphina*, **n. sp.**, Devonian, New York, p. 132, pl. xlii, fig. 8; *T. turricula*, **n. sp.**, Devonian, New York, pp. 135 & 136, pl. xxxviii, figg. 5 & 6: HALL & CLARKE (20).

(iii) *Calathospongiinae*, **n. sub-fam.**, for genera *Calathospongia*, *Thamnodictya*, *Clepsydraspongia*, and *Cleodictya*, defined; HALL & CLARKE (20) p. 53.

- +*Calathospongia*, **n. g.**, defined, type species *Dictyophyton redfieldi* Hall, p. 165; *C. amphorina*, **n. sp.**, Carboniferous, Indiana, p. 182, pl. lxviii, fig. 6; *C. carceralis*, **n. sp.**, Carboniferous, Ohio and Indiana, p. 157, pl. li, figg. 2-4, pl. lii, figg. 2 & 3, pl. lx, figg. 1 & 2; *C. carlli*, **n. sp.**, Carboniferous, Pennsylvania, pp. 158 & 159, pl. lii, figg. 4-7, text-fig.

- 21; *C. magnifica*, **n. sp.**, Carboniferous, Indiana, pp. 182 & 183, pl. lvi, fig. 5, pl. lvii, fig. 1; *C. redfieldi* Hall, Carboniferous, Ohio and Pennsylvania, pp. 155 & 156, pl. xlviii, figg. 1 & 2, pl. xlix, figg. 1-4; *C. (?) sacculus* Hall, Carboniferous, Ohio, redescribed, p. 160, pl. l, fig. 7; *C. tiffanyi*, **n. sp.**, Carboniferous, Ohio, pp. 158-160, pl. li, figg. 5 & 6: HALL & CLARKE (20).
- †*Cleodictya* Hall, defined, with type *C. gloriosa*, p. 163; *C. claypolei*, **n. sp.**, Carboniferous, Ohio, p. 163, pl. li, fig. 1; *C. gloriosa* Hall, Carboniferous, Indiana, redescribed, pp. 183 & 184, pl. lxix, fig. 1, pl. lxx, figg. 1 & 2; *C. mohri* Hall, Carboniferous, Indiana, redescribed, pp. 184-187, pl. lxx, fig. 3, text-figg. 34-37: HALL & CLARKE (20).
- †*Clepsydraspongia*, **n. g.** for type species *C. matutina*, **n. sp.** from Portage Sandstones, Devonian, New York; HALL & CLARKE (20) pp. 71 & 72, pl. xxxiv, figg. 1 & 2.
- †*Thamnodictya* Hall, defined, pp. 160 & 161; type species *T. (Dictyophyton) newberryi* Hall, pp. 161 & 162, pl. l, figg. 1-6, pl. lii, fig. 1; *T. ortonii*, **n. sp.**, pp. 162 & 163, pl. liii, figg. 1 & 2; both from Carboniferous, Ohio; HALL & CLARKE (20).
- (iv) *Physospongiinæ*, **n. sub-fam.** for genera *Physospongia* and *Roemerispongia*, defined; HALL & CLARKE (20) p. 53.
- †*Physospongia* Hall, defined, pp. 187-189; *P. alternata* Hall, redescribed, p. 195, pl. lxii, fig. 11; *P. colletti* Hall, redescribed, pp. 193-195, pl. lxiii, figg. 1-7, text-figg. 43 & 44; *P. dawsoni* Whitfield, pp. 189-193, pl. lxii, figg. 1-10, text-figg. 38-42; *P. multibursaria*, **n. sp.**, pp. 196 & 197, pl. lxi, fig. 7, text-fig. 45; all from Carboniferous, Indiana: HALL & CLARKE (20).
- †*Roemerispongia*, **n. g.**, defined, with genotype *R. (Dictyophyton) gerolstinensis* Roemer; HALL & CLARKE (20) p. 67, text-fig. 12.
- (v) *Hyphantæniinæ*, **n. sub-fam.** for genus *Hyphantænia*, defined; HALL & CLARKE (20) p. 53.
- †*Hyphantænia*, **nom. nov.** for *Uphantænia* Vanuxem, defined, pp. 137-139; type species *H. chemungensis* Van., Devonian, New York, redescribed, pp. 139 & 140, pl. xxviii, figg. 1 & 2, pl. xxix, fig. 1, pl. xlv, fig. 1; HALL & CLARKE (20).
- (vi) *Hallodictyinae*, **n. sub-fam.** for genera *Hallodictya*, *Actinodictya* and *Cryptodictya*, defined; HALL & CLARKE (20) p. 53.
- †*Actinodictya* Hall, defined, pp. 142 & 143; type species *A. placenta* Hall, Devonian, New York, redescribed, p. 143, pl. xxx, figg. 1-3, pl. xxxi, figg. 1 & 2; HALL & CLARKE (20).
- †*Cryptodictya* Hall, defined, for type species *C. alleni* Hall, Devonian, New York, redescribed; HALL & CLARKE (20) pp. 144 & 145, pl. xxxi, figg. 3-5, pl. xxxii, figg. 1-4.
- †*Hallodictya*, **n. g.** defined, with type species *H. sciensis*, p. 140; *H. cottaniana*, **n. sp.**, Devonian, New York, p. 142, pl. xli, fig. 12; *H. sciensis*, **n. sp.**, Devonian, Allegany County, pp. 140 & 141, pl. xxxvi, fig. 8; HALL & CLARKE (20).
- (vii) *Aglithodictyinae*, **n. sub-fam.** for genus *Aglithodictya*, defined; HALL & CLARKE (20) p. 53.
- †*Aglithodictya*, **n. g.** defined, with type species *A. nummulina*, **n. sp.**, Devonian, Pennsylvania; HALL & CLARKE (20) pp. 145 & 146, pl. xxv, figg. 6-9.

## DICTYOSPONGIDÆ INCERTÆ SEDIS.

- +*Dictyophyton*, sp.; WELLER (73) p. 69.  
 +*Ectenodictya* Hall, defined, p. 164; type species *E. implexa* Hall, Carboniferous, Ohio, redescribed, pp. 164 & 165, pl. liv, fig. 3 & 4; HALL & CLARKE (20).

## Family PLECTOSPONGIDÆ.

- List of genera; MINCHIN (47) p. 123: family defined; ZITTEL (82) p. 55.  
 +*Cyathodictya*, **nom. nov.** for *Cyathophycus*, p. 24 footnote, and p. 200; *C. reticulata* Walcott, from Utica Slate, New York, p. 24 footnote, and p. 200, pl. i, figg. 1-6: HALL & CLARKE (20).  
 +*Cyathophycus*, vide etiam *Cyathodictya* and *Sphaerodictya*.  
 +*Plectoderma scitulum* Hinde; PEACH & HORNE (50) p. 708.  
 +*Sphaerodictya*, **nom. nov.** for *Cyathophycus* seu *Teganium*; *S. sub-sphaerica* Walcott, Utica Slate, New York; HALL & CLARKE (20), p. 26 footnote, and p. 20, pl. i, figg. 14-22.  
 +*Teganium* Rauff, genus not accepted; HALL & CLARKE (20) p. 25 footnote.

## Family BRACHIOSPONGIDÆ.

*Brachiospongia* Marsh, genus defined; ZITTEL (82) p. 55.

## Family PATTERSONIDÆ.

*Pattersonia* Miller, genus defined; ZITTEL (82) p. 55.

## Family RECEPTACULITIDÆ.

- +*Ischadites*, sp., and +*I. antiquus* Salt.; PEACH & HORNE (50) pp. 668 & 686. +*I. iowaensis* Owen; SCHUCHERT (59) p. 153. +*I. koenigi* Murch; PEACH & HORNE (50) pp. 668, 686, 708. +*I. squamifer* Hall; SCHUCHERT (58) p. 278.  
 +*Receptaculites*, **n. sp.**, from Helderbergian Fauna, New York; SCHUCHERT (58) p. 275. +*R.*, sp. [placed under Protozoa]; BURHENNE (6) p. 44. +*R. arcticus* Eth., compared with +*R. oweni*; SCHUCHERT (59) p. 253. +*R. australis* Salter, structure and localities; ETHERIDGE & DUN (14). +*R. devonicus* Whit.; BOWNOCKER (5) p. 20. +*R. infundibuliformis* Eaton; SCHUCHERT (58) p. 278. +*R. occidentalis* Salt. [classed amongst Protozoa]; BARLOW (3) pp. 122 & 298. +*R. oweni* Roem., from Lower Silurian of Baffin Land, described; SCHUCHERT (59) pp. 152 & 153. +*R. pearyi*, **n. sp.**, from Cape Harrison, Princess Marie Bay, Niagara (?) Group; WHITFIELD (75) pp. 19 & 20, pl. i, fig. 1: WHITFIELD & HOVEY (76) p. 350.

## Family AMPHISPONGIDÆ.

*Amphispongia oblonga* Salt., Silurian of Scotland; PEACH & HORNE (50) pp. 668 & 708.

## Family POLLAKIDÆ.

- +*Hyalostelia* Z., genus defined; ZITTEL (82) p. 55. *H.* sp. and *H. (Hyalonema) fascicularis* McCoy; PEACH & HORNE (50) p. 668.  
 +*Spiractinella wrightii* Crtr., spicules figured; ZITTEL (82) p. 56, fig. 69.



(ii) *DICTYONINA*.

Diagnosis, as sub-class, with orders *Uncinataria* and *Inermia*; MINCHIN (47) p. 123: definition and characters, as sub-order; ZITTEL (82) pp. 56 & 57.

## Order UNCINATARIA

Diagnosis; MINCHIN (47) p. 123.

## Sub-order CLAVULARIA.

Diagnosis; MINCHIN (47) p. 123.

## Family FARREIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 123.

*Farrea occa* Bwk., from Andamans, 238–458 meters, and from S.W. of Cape Comorin, 787 meters; SCHULZE (65) p. 38.

## Sub-order SCOPULARIA.

Diagnosis; MINCHIN (47), p. 123.

## Family EURETIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124.

+*Sporadopyle* Z., genus defined; ZITTEL (82) p. 57.

+*Tremadictyon* Z., genus defined; *T. reticulatum* Goldf., figures of sponge and skeleton; ZITTEL (82) p. 57, fig. 73.

+*Verrucocelia tubulata* T. Smith; ROWE (55) p. 360.

## Family CRATICULARIDÆ.

Family defined; ZITTEL (82) p. 57.

+*Craticularia*, genus defined, with figures of *C. paradoxa* Mnstr., and its skeleton; ZITTEL (82) p. 57, fig. 74. *C. sp.*; ZAHÁLKA (78) pp. 31 & 92. *C. fittoni*; ROWE (55) pp. 317 & 360. *C. subseriata* Roem.; ZAHÁLKA (79) pp. 35, 43–49. *C. vulgata* Poč.; ZAHÁLKA (78) p. 92.

## Family MELLITTIONIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124.

*Aphrocallistes* sp., figured; CHUN (8) p. 475. *A. beatrix* Gray, from Andamans, 362 meters and 434–541 meters, pp. 38 & 39; *A. bocagei* E. P. Wright, from Andamans and S.W. of Cape Comorin, 165–787 meters, pp. 39–41; SCHULZE (65). *A. vastus* F. E. S., from Arctic Seas, 565, 640 & 642 meters; SCHULZE (63) p. 108. *A. whiteavesianus* Lambe, distribution; LAMBE (32) p. 165.

## Family COSCINOPORIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124: family defined; ZITTEL (82) p. 57.

*Chonelasma calyx* F. E. S., from Arctic Seas, 1053 meters; SCHULZE (63) p. 108.

*Coscinopora* Goldf., genus defined; ZITTEL (82) p. 58. +*C. sp.*, Cambro-Silurian; BARLOW (3) p. 121. +*C. infundibuliformis* Goldf.; ROWE (55) p. 360: figures of sponge and skeletal elements; ZITTEL (82)

- p. 58, fig. 75. †*C. macropora* Eaton; the type specimen is a specimen of *Polypora distans*, a Polyzoan; WHITFIELD & HOVEY (76) pp. 190 & 200.
- +*Guettardia stellata* Mich.; ROWE (55) pp. 317 & 360: ZAHÁLKA (79) p. 35. †*G. trilobata*; ZAHÁLKA (79) pp. 13 & 35.
- +*Leptophragma*, genus defined; ZITTEL (82) p. 58. *L. fragilis*; ZAHÁLKA (79) pp. 13, 35, 44. *L. murchisoni* Goldf.; ROWE (55) p. 36.
- +*Pleurostoma bohemicum* Z.; ZAHÁLKA (78) pp. 51, 62, 92, 100, 102: ZAHÁLKA (79) pp. 15, 25, 27, 29, 35. †*P. scyphus*; ZAHÁLKA (79) pp. 17 & 35: ŽELÍZKO (80) p. 16.

### Family TRETODICTYIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124.

*Hexactinella*? sp. ?; macerated fragments of a dictyonine sponge, from the Island of Galli, near Amalfi; SCHULZE (61) pp. 2 & 3, pl. i, figg. 1-7. *H. grimaldii* Tops., figured; RICHARD (51) pl. ix, figg. 1 & 2.

### SCOPULARIA INCERTÆ SEDIS.

*Tretocalyx*, n. g. for *T. polæ*, n. sp., from Red Sea, 341-820 meters, a sponge belonging to the group Scopularia, but its family position uncertain for the present; SCHULZE (62) pp. 9-13, pl. iii.

### Order INERMIA.

Diagnosis; MINCHIN (47) p. 124.

### Family MÆANDROSPONGIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124: definition of family; ZITTEL (82) p. 61.

*Aulocystis grayi* Bwk., Schulze, from Red Sea, 490-868 meters, pp. 1-9, pls. i & ii; *A. zitteli* Marsh & Meyer, type and other specimens re-described, pp. 5-8, pl. ii: SCHULZE (62).

+*Becksia* Schlüt., genus defined, with figures of *B. sokelandi* Schlüt., and its skeleton; ZITTEL (82) p. 61, fig. 82.

+*Camerospongia* d'Orb., genus defined, with figure of *C. fungiformis* Goldf.; ZITTEL (82) p. 61, fig. 83. *C. aperta* Hinde; *C. capitata* T. Smith; *C. subrotunda* Mant.: ROWE (55) p. 361. *C. monostoma* Roem.; ZAHÁLKA (79) pp. 10 & 36.

+*Cyrtobolia formosa* Rss.; ZAHÁLKA (79) pp. 10 & 11. †*C. morchella* Rss.; ZAHÁLKA (79) p. 10.

+*Cystispongia* Roem., genus defined, with figure of *C. bursa* Quenst., and its skeleton; ZITTEL (82) p. 61, fig. 84. *C. verrucosa* Rss.; ZAHÁLKA (79) pp. 10, 15, 27, 29, 36.

+*Plocoscyphia* Rss., genus defined, with figure of *P. pertusa* Gein., and its skeletal elements; ZITTEL (82) p. 61, fig. 81. *P. convoluta* T. Smith; ROWE (55) p. 361. *P. labrosa* T. Smith; JUKES-BROWNE & HILL (25) p. 481: ROWE (55) p. 361: ZAHÁLKA (79) p. 10. *P. labyrinthica* Rss.; ZAHÁLKA (79) pp. 25 & 36.

+*Pyrospongia*, n. g. of *Mæandrospongiæ* allied to *Plocoscyphia*, p. 37, for *P. vrbæi*, n. sp., pp. 37-40, figg. 70-80, also pp. 10, 11, 15, 19, 29, 36; *P. čížkovicensis*, n. sp., pp. 40 & 41, figg. 83-85, also pp. 10 & 36; †*P. košticensis*, n. sp., p. 40, figg. 81 & 82, also pp. 11 & 36; from Cretaceous (Teplitz Horizon) of Bohemia: ZAHÁLKA (79).

+*Toulminia*, sp.; ROWE (55) p. 360.

+*Tremabolites megastoma* Roem.; ZAHÁLKA (79) p. 36.

## Extinct Families of DICTYONINA.

## Family STAURODERMIDÆ.

- Family defined; ZITTEL (82), p. 58: list of genera; MINCHIN (47) p. 124.  
 †*Casearia* Quenst., genus defined; ZITTEL (82) p. 59.  
 †*Cypellia* Z., genus defined, with figures of *C. rugosa* Goldf., and its skeletal structure; ZITTEL (82) p. 58, fig. 76.  
 †*Eubrochus clausus* Soll.; JUKES-BROWNE & HILL (25) p. 480.  
 †*Ophrystoma ocellatum* Seeley, synonym †*Ventriculites cavatus* Sollas; JUKES-BROWNE & HILL (25) p. 481.  
 †*Placotrema cretaceum* Hinde; ROWE (55) p. 361.  
 †*Porospongia* d'Orb., genus defined, with figures of *P. impressa* Goldf., and its skeleton; ZITTEL (82) p. 59, fig. 77.  
 †*Stauroderma* Z., genus defined; ZITTEL (82) p. 59.

## Family CALLODICTYONIDÆ.

- List of genera; MINCHIN (47) p. 124.  
 †*Porochonia simplex* T. Smith; ROWE (55) p. 360.  
 †*Sklerokalia cunningtoni* Hinde; JUKES-BROWNE & HILL (25) p. 481.

## Family CÆLOPTYCHIDÆ.

- Definition of family and unique genus †*Cæloptychium*, with figures of *C. agaricoides* Goldf., and its skeleton; ZITTEL (82) p. 60, fig. 80.

## Family VENTRICULITIDÆ.

- Family defined; ZITTEL (82) p. 59: list of genera; MINCHIN (47) p. 125.  
 †*Cephalites* (?) sp. (?); ZAHÁLKA (79) p. 35. †*C. benettii* Mant.; JUKES-BROWNE & HILL (25) p. 480: ROWE (55) pp. 360 & 361. †*C. capitatus* Smith; JUKES-BROWNE & HILL (25) p. 480. †*C. catenifer* Smith; ROWE (55) p. 361. †*C. compressus* Smith; JUKES-BROWNE & HILL (25) p. 480. †*C. longitudinalis* Smith; JUKES-BROWNE & HILL (25) p. 480: ROWE (55) pp. 360 & 361.  
 †*Pachyteichisma* Z., genus defined, with figures of *P. carteri* Z., sponge and skeleton; ZITTEL (82) p. 59, fig. 78.  
 †*Polyblastidium racemosum* T. Smith; ROWE (55) p. 360.  
 †*Rhizopot(h)erion*, sp.; ŽELÍZKO (80) p. 7. †*R. cervicorne* Goldf.; ZAHÁLKA (78) pp. 28, 30, 31, 51, 92: ZAHÁLKA (79) pp. 44, 45, 48, 49.  
 †*Ventriculites*, reconstructed; MINCHIN (47) p. 16, fig. 23: genus defined; ZITTEL (82) p. 60. *V.* sp.; ZAHÁLKA (78) pp. 27, 60, 92: ZAHÁLKA (79) p. 15. *V. angustatus* Roem.; ZAHÁLKA (78) pp. 27, 51, 56, 78, 92: ZAHÁLKA (79) pp. 13, 15, 17, 22, 23, 25–27, 29, 35, 43, 46. *V. cavatus* Soll., a synonym of *Ophrystoma ocellatum* Seeley; JUKES-BROWNE & HILL (25) p. 481. *V. convolutus* Hinde; *V. cribrus* Phill.; *V. decurrens* Smith; *V. impressus* Smith; and *V. infundibuliformis* Woodw.: ROWE (55) p. 360. *V. mammillaris* Smith; JUKES-BROWNE & HILL (25) p. 481: ROWE (55) p. 360. *V. marginatus*; ZAHÁLKA (79) pp. 11 & 36. *V. odontostoma* Rss.; ZAHÁLKA (79) pp. 43–48. *V.* (?) *quincuncialis* (?) Smith; JUKES-BROWNE & HILL (25) p. 481. *V. radiatus* Mant.; ROWE (55) p. 360: ZAHÁLKA (78) pp. 28, 30, 51, 80, 92: ZAHÁLKA (79) pp. 13, 17, 24, 27, 29, 36, 43. *V. striatus* Smith, figured; ZITTEL (82) p. 60, fig. 79. *V.* (?) *texturatus* (?) Goldf.; JUKES-BROWNE & HILL (25) p. 481. *V. zippei*; ZAHÁLKA (79) pp. 13 & 36.

## HEXACTINELLIDA INCERTÆ SEDIS (NOMINA NUDA).

"*Monorhaphis*, n. g. F. E. Schulze," figured; CHUN (8) p. 481.

"*Platylistrum platessa*, n. g., n. sp.," figured; CHUN (8) p. 480.

## D. DEMOSPONGIÆ.

*Demospongiæ*, classification, with list of orders, families and genera; MINCHIN (47) pp. 145-154.

## (i) TETRAXONIDA.

Diagnosis; MINCHIN (47) p. 146.

## (a) Order CARNOSA.

Diagnosis; MINCHIN (47) p. 146.

## Sub-order MICROTRIÆNOSA.

Diagnosis; MINCHIN (47) p. 146.

*Dercitus* Gray, the genus to be placed in the family *Ancorinidæ* Z.; SCHRAMMEN (57) p. 9. + *D. primævus* Z., from Upper Senonian, re-described; SCHRAMMEN (57) p. 8, pl. ii, figg. 1-3. *D. simplex* Crtr., from Ternate, re-described; THIELE (68) pp. 20 & 21, pl. ii, fig. 1.

## Sub-order MICROSCLEROPHORA.

Diagnosis; MINCHIN (47) p. 147: criticism of the application of the name [vide II, B (iv) (c)]; THIELE (68) p. 64.

## Family CORTICIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 147.

*Corticium candelabrum* O. S., from Funafuti, 50-70 fathoms; KIRKPATRICK (28) p. 349.

## Family PLAKINIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 147.

*Orthorhachis problematica* Sollas, probably a species of *Placinolopha*; KIRKPATRICK (28) p. 350.

*Placinastrella clathrata*, n. sp., from Funafuti; KIRKPATRICK (28) pp. 350 & 351, pl. xiii, fig. 3, *a-o*.

*Placinolopha spinosa*, n. sp., from Funafuti, 50-70 fathoms; KIRKPATRICK (28) p. 350. pl. xiii, fig. 2, *a-m*.

## Sub-order OLIGOSILICINA.

Diagnosis of sub-order; MINCHIN (47) p. 147: to be removed from the order Carnosa, as defined by Topsent, and placed as *Chondrosiina*, a sub-family, including the genera *Chondrilla* and *Chondrosia*, allied to *Tethya*; THIELE (68) pp. 64 & 65. [*Oligosilicina*, sens. Keller, vide *Halichondrina*.]

## Family CHONDROSIDÆ.

List of genera; MINCHIN (47) p. 147.

*Chondrilla*, the genus derived from *Tethya* by loss of monaxons, p. 65;



*C. distincta* F. E. S., from Ternate, p. 67, pl. iii, fig. 20; *C. grandistellata*, **n. sp.**, from Ternate, p. 65, pl. iii, fig. 18: THIELE (68). *C. mixta* F. E. S., from Funafuti; KIRKPATRICK (28) p. 349. *C. nucula* O. S., specimen wrongly identified by Kieschnick [(24) Zool. Rec. 1896]; it does not occur in the collection; THIELE (68) p. 56. *C. nuda* Lend., from Christmas Island; KIRKPATRICK (27) p. 130. *C. ternatensis*, **n. sp.**, from Ternate; THIELE (68) pp. 65-67, pl. iii, fig. 19.

+*Chondrillopsis asterias*; ZAHÁLKA (78) p. 80, p. 92.

*Chondrosia*, the genus derived from *Chondrilla* by complete loss of spicules, p. 65; *C. corticata*, **n. sp.**, from Ternate, pp. 67 & 68, pl. iii, fig. 21; *C. debilis*, **n. sp.**, from Ternate, allied to *C. reniformis*, pp. 68 & 69: THIELE (68). *C. plebeja* O. S., and *C. reniformis* Ndo., from Christmas Island, general distribution given; KIRKPATRICK (27) pp. 129 & 130.

### (b) Order TETRACTINELLIDA.

Diagnosis, as order; MINCHIN (47) p. 147: written *Tetractinellina*, as sub-order of order *Tetraxonida*; THIELE (68) p. 20.

#### (1) Sub-order CHORISTIDA.

Diagnosis of sub-order; MINCHIN (47) 147.

#### Tribe SIGMATOPHORA.

Diagnosis; MINCHIN (47) p. 147.

#### Family TETILLIDÆ.

Characters of family; KIESCHNICK (26) p. 555: diagnosis of family and list of genera; MINCHIN (47) p. 147.

*Craniella cranium* O. F. M., from Hudson Bay, 20-30 fathoms; LAMBE (30) p. 378 and (31) p. 26: distribution; LAMBE (32) p. 164. +*C. logani* Dawson, similarity of spicules to those of *C. cranium*; LAMBE (30) p. 278. *C. spinosa* Lambe, and *C. villosa* Lambe, distribution; LAMBE (32) p. 164.

*Tetilla* O. S., diagnosis and history of genus; KIESCHNICK (26) pp. 555 & 556. *T. amboinensis*, **n. sp.**; KIESCHNICK (26) pp. 556-558, pl. xlv, figg. 1-7: identical with *T. bacca* Sel.; THIELE (68) p. 39. *T. australiensis* Carter, includes *T. ternatensis* Lindgren nec Kieschnick; THIELE (68) pp. 39 & 40. *T. bacca* Selenka, from Christmas Island; KIRKPATRICK (27) p. 132: includes *T. amboinensis* Kieschnick, *T. rubra* Kieschnick, *T. ternatensis* Kieschnick nec Lindgren, *T. merguensis* Sollas, and *T. violacea* Kieschnick; THIELE (68) pp. 39 & 40. *T. rubra*, **n. sp.**; KIESCHNICK (26) pp. 560-562, pl. xlv, figg. 23-29: identical with *T. bacca* Sel.; THIELE (68) p. 39. *T. schulzei*, **n. sp.**; KIESCHNICK (26) pp. 562 & 563, pl. xlv, figg. 16-22. *T. ternatensis* Kieschnick, from Christmas Island; KIRKPATRICK (27) p. 132: a synonym of *T. bacca* Sel., but *T. ternatensis* Lindgren is a synonym of *T. australiensis* Carter; THIELE (68) pp. 39 & 40. *T. violacea*, **n. sp.**, KIESCHNICK (26) pp. 559 & 560, pl. xlv, figg. 8-15: identical with *T. bacca* Sel.; THIELE (68) p. 39.

#### Tribe ASTROPHORA.

Diagnosis; MINCHIN (47) p. 147.

## Family THENEIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 147.

*Thenea muricata* Bwk., from East Greenland, 250 fathoms ; LAMBE (31) pp. 26 & 27 : complete distribution ; LAMBE (32) p. 164 : figured ; MINCHIN (47) p. 17, fig. 24.

## Family PACHASTRELLIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 147.

*Characella sollasi* Tops., figured ; RICHARD (51) pl. ix, fig. 3.

## Family STELLETTIDÆ.

Diagnosis of family and of sub-families *Homasterina*, *Euasterina*, *Sanidasterina*, and *Rhabdasterina*, and list of genera ; MINCHIN (47) p. 148 ; characters of the family ; KIESCHNICK (26) p. 578.

*Ancorina*, vide etiam *Ecionema* : "*A. aptos*" O. S., identical with *Tuberella tethyoides* Keller, hence name of the species *Tuberella aptos*, q. v. ; TOPSENT (70) pp. 286-288. *A. simplex* Lend. a synonym of *Ecionema bacilliferum* ; KIRKPATRICK (27) p. 131.

*Astellera tuberosa* Tops., figured ; RICHARD (51) pl. ix, fig. 4.

*Ecionema* Bwk., the name should be written *Ecionemia* : the application and affinities of the genus discussed, especially the question of its distinctness from *Ancorina*, pp. 28-30 ; *E. sp.* from Ternate, pp. 35 & 36, pl. ii, fig. 10 ; THIELE (68). *E. bacilliferum* Crtr., from Christmas Island, includes *Ancorina simplex* Lend. ; KIRKPATRICK (27) p. 131. *E. cinerea*, n. sp., from Ternate, pp. 32-34, pl. ii, fig. 8 ; *E. cribrosa*, n. sp., from Ternate, perhaps = *Stelletta truncata* Kieschnick, pp. 31 & 32, pl. ii, fig. 7 ; *E. nigrescens*, n. sp., from Ternate, perhaps identical with *Stelletta lobata* Kieschnick, q. v., p. 31, and pp. 34 & 35, pl. ii, fig. 9 ; THIELE (68).

*Penares* Gray, application of the generic name discussed, pp. 21 & 22 ; *P. sollasi*, n. sp., from Ternate, pp. 22 & 23, pl. ii, fig. 2 : THIELE (68).

*Psammastra* Soll., application and affinities of genus discussed, p. 37 ; *P. conulosa* Kieschnick, from Ternate ; Kieschnick's diagnosis and description corrected and the sponge redescribed, pp. 36-39, pl. ii, figg. 11 & 12 : THIELE (68).

*Stelletta*, diagnosis of genus ; KIESCHNICK (26) pp. 550 & 578. *S. (Pilocrota) brunnea*, n. sp., from Ternate ; THIELE (68) pp. 24 & 25, pl. ii, fig. 3. *S. clavosa* Ridl., redescribed ; KIESCHNICK (26) pp. 554 & 555. *S. (Myriastra) ? debilis*, n. sp., from Ternate ; THIELE (68) pp. 25 & 26, pl. ii, fig. 4. †*S. inclusa* Hinde ; ROWE (55) p. 359. *S. lobata*, n. sp. ; KIESCHNICK (26) pp. 550 & 551, pl. xlv, figg. 30-37 : perhaps identical with *Ecionemia nigrescens* ; THIELE (68) p. 31. *S. reniformis*, n. sp. ; KIESCHNICK (26) pp. 551-553, pl. xlv, fig. 1, pl. xlv, figg. 38-46. *S. simplicifurca* (Soll.), from Christmas Island ; KIRKPATRICK (26) p. 131. *S. (Myriastra) ternatensis*, n. sp., from Ternate ; THIELE (68) pp. 26 & 27, pl. ii, fig. 5. *S. truncata*, n. sp. ; KIESCHNICK (26) pp. 553 & 554 : perhaps identical with *Ecionemia cribrosa* ; THIELE (68) p. 31. *S. (Anthastra) variohamata*, n. sp., from Ternate ; THIELE (68) pp. 27 & 28, pl. ii, fig. 6.

†*Stolleya*, n. g. of *Ancorinide*, diagnosis, p. 7 ; *S. microtulipa*, n. sp., p. 7, pl. iii, fig. 3 ; *S. ornatissima*, n. sp., p. 7, pl. i, fig. 4, pl. iii, fig. 5, from Upper Senonian ; SCHRAMMEN (57).

†*Tethyopsis* Zittel non Stewart, a genus of *Ancorinide* Z. ; SCHRAMMEN (57), p. 9. *T. steinmanni* described from Upper Senonian ; SCHRAMMEN (57) p. 8 : figured, ZITTEL (82) p. 46, fig. 52.

## Family GEODIDÆ.

Diagnosis of family, and of subfamilies *Erylina* and *Geodina*, with list of genera; MINCHIN (47) p. 148.

*Cydonium mulleri* Flem., distribution; LAMBE (32) p. 164. *C. sphaeroides* Kieschnick, is a *Geodia*; THIELE (68) p. 40.

*Erylus inequalis* Kieschnick [(24) Zool. Rec. 1896], the type specimen does not exist, and the name was given in error and becomes a *nomen nudum*; THIELE (68) pp. 47 & 48. *E. monticularis*, **n. sp.**, from Funafuti; KIRKPATRICK (28) pp. 351 & 352, pl. xiv, fig. 3, a-h. *E. nobilis*, **n. sp.**, from Ternate; THIELE (68) pp. 48 & 49, pl. ii, fig. 17.

*Geodia berryi* Sollas, = *G. cydonium*, var. *berryi* Lindgren, from Ternate; THIELE (68) p. 43. †*G. cretacea*, **n. sp.**, from Upper Senonian; SCHRAMMEN (57) pp. 8 & 9, pl. iii, fig. 1. †*G. gigantea* Poč.; ZAHÁLKA (78) pp. 67, 77, 78, 92. *G. kükenethali*, **n. sp.**, for a specimen from Ternate, identified by Kieschnick [(24) Zool. Rec. 1896] as *G. glariosum* Soll.; THIELE (68) pp. 43-45, pl. ii, fig. 15. *G. sphaeroides* for *Cydonium sphaeroides* Kieschnick, from Ternate; THIELE (68) pp. 41 & 42, pl. ii, fig. 14.

*Sidonops* seu *Sydonops* seu *Synops*; *S. alba* Kieschnick, from Ternate, distinct from *S. picteti* Tops., from Amboina, but probably identical with *S. picteti* Lindgren from Java, redescribed; THIELE (68) pp. 45-47, pl. ii, fig. 16. *S. picteti* Tops., from Christmas Island; KIRKPATRICK (27) p. 130.

## Family PLACOSPONGIDÆ.

Characters of family; KIESCHNICK (26) p. 573: diagnosis and list of genera; MINCHIN (47) p. 148.

*Placospongia* Gray, diagnosis of genus, p. 573; *P. melobesioides* Gray, redescribed, p. 574, pl. xlv, fig. 2: KIESCHNICK (26). *P. mixta*, **n. sp.**, for specimen from Ternate wrongly identified by Kieschnick [(24) Zool. Rec. 1896] as *P. melobesioides* Gray; THIELE (68) pp. 56, 72 & 73, pl. iii, fig. 25.

## Family RAPHDIDÆ.

*Raphididæ*, **n. f.** of Tetractinellids for the genera *Ophiraphidites* and *Cephaloraphidites*; SCHRAMMEN (57) p. 9.

†*Cephaloraphidites*, **n. g.**, diagnosis, p. 6; *C. cavernosus*, **n. sp.**, pp. 6 & 7, pl. iii, fig. 4; *C. milleporatus*, **n. sp.**, p. 6, pl. ii, fig. 4, from Upper Senonian: SCHRAMMEN (57).

†*Ophiraphidites* Crtr., diagnosis; SCHRAMMEN (57) p. 4. *O. anastomans* Hinde; ROWE (55) p. 359. *O. cylindricus*, **n. sp.**, p. 5, pl. i, fig. 3, pl. iii, fig. 2; *O. infundibuliformis*, **n. sp.**, p. 5, pl. i, fig. 1, pl. ii, fig. 6; *O. tuberosus*, **n. sp.**, p. 5, pl. ii, fig. 5: SCHRAMMEN (57).

## (2) LITHISTIDA.

Diagnosed as a *suborder*; MINCHIN (47) p. 148: as an *order*, divided into five suborders, *Tetracladina*, *Eutaxi cladina*, *Anomocladina*, *Megamorina*, *Rhizomorina*; ZITTEL (82) pp. 46 & 47. *Lithistina* as suborder of order *Tetraxonida*; THIELE (68) pp. 20 & 49.

## Tribe HOPLOPHORA.

Diagnosis; MINCHIN (47) p. 148.

## Family TETRACLADIDÆ.

Diagnosed as a family; list of genera given; MINCHIN (47) p. 148.

*Tetracladina*, defined as a suborder; ZITTEL (82) p. 47.

+*Aulocopium*, genus defined; *A. aurantium* Oswald, figured: ZITTEL (82) p. 47.

+*Callopegma* Z., genus defined; *C. acaule* Z., the sponge and its skeleton figured: ZITTEL (82) p. 48.

*Discodermia claviformis* Kieschnick [(24) Zool. Rec. 1896]; doubts thrown on the validity of the species, pp. 49 & 50; *D. conica* Kieschnick, a *Theonella*, p. 50: THIELE (68).

+*Hallirhoa* Lamx., genus defined; ZITTEL (82) p. 49. *H. agariciformis* Benett, and *H. costata* Lam.; JUKES-BROWNE & HILL (25) pp. 68, 262, 264 & 480.

+*Jerea* Lamx., genus defined; *J. pyriformis* Lamx., and *J. quenstedti* Z., figured: ZITTEL (82) p. 49, figg. 57 & 58. *J. reticulata* Hinde, and *J. websteri* Low.; JUKES-BROWNE & HILL (25) pp. 68 & 480.

+*Kalpinella pateriformis* Hinde, and +*K. rugosa* Hinde; JUKES-BROWNE & HILL (25) p. 480.

+*Pholidocladia ramosa* Hinde; ROWE (55) p. 360.

+*Phymatella* sp., p. 27, and +*P. intumescens* (Roem.), pp. 29, 36; ZAHÁLKA (79). +*P. nodosa* Hinde; JUKES-BROWNE & HILL (25) p. 481. +*P. tuberosa* (Roem.); ZAHÁLKA (79) p. 36, figured; ZITTEL (82) p. 48, fig. 55.

+*Plinthosella compacta* Hinde, +*P. nodosa* Hinde, and +*P. squamosa* Z.; ROWE (55) p. 360. +*P. squamosa* Z.; ZAHÁLKA (79) pp. 15, 36 & 44: figured; ZITTEL (82) p. 49, fig. 59.

+*Polyjerea arbuscula* Hinde, and +*P. lobata* Hinde; JUKES-BROWNE & HILL (25) p. 481.

+*Rhagadinia* Z., genus defined; *R. rimosa* (Roem.), figured: ZITTEL (82) p. 49, fig. 60. *R. sulcata* Hinde; ROWE (55) p. 359.

+*Rhopalospongia gregaria* Benett, and +*R. obliqua* Hinde; JUKES-BROWNE & HILL (25) p. 481.

+*Siphonia* Park., genus defined; ZITTEL (82) p. 49. *S. geinitzi* Z.; ZAHÁLKA (78) pp. 31, 92. *S. königi* Mant.; ROWE (55) p. 359. *S. tulipa* Z., figured; ZITTEL (82) p. 56: JUKES-BROWNE & HILL (25) pp. 264 & 481.

+*Thecosiphonia craniata* Zah., pp. 26, 36, and +*T. ternata* (Rss.), pp. 26, 29, 36; ZAHÁLKA (79).

*Theonella*, genus characterized, p. 50; *T. conica* (Kieschnick) from Ternate redescribed, pp. 50-52, pl. iii, figg. 1 & 2; *T. incerta*, n. sp., from Ternate, perhaps identical with either *T. pratti* Bwk. or *T. ferruginea* H., p. 54, pl. iii, figg. 7 & 8; *T. swinhoei* Gray, from Ternate, pp. 52 & 53, pl. iii, figg. 3 & 4: THIELE (68).

+*Trachysycon nodosum* Hinde; JUKES-BROWNE & HILL (25) p. 481.

## Family DESMANTHIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 149.

## Family CORALLISTIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 149.

## Family PLEROMIDÆ seu MEGAMORINIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 149: as suborder *Megamorina*, defined; ZITTEL (82) p. 51.



- +*Carterella cylindrica* Z. ; JUKES-BROWNE & HILL (25) pp. 264, 480.  
 †*Doryderma* Z., genus defined ; ZITTEL (82) p. 52, fig. 64. *D. benetti* Hinde ; JUKES-BROWNE & HILL (25), pp. 68 & 480. *D. dichotomum* Benett ; JUKES-BROWNE & HILL (25) p. 480: figured ; ZITTEL (82) p. 52, fig. 64. *D. ramosum* (Mant.) ; ROWE (55) p. 359 ; ZAHÁLKA (79) p. 36.  
 †*Heterostinia obliqua* Benett ; JUKES-BROWNE & HILL (25) p. 480 ; ROWE (55) p. 359.  
 †*Holodictyon capitatum* Hinde ; JUKES-BROWNE & HILL (25) p. 480.  
 †*Isoraphinia texta* (Roem.) ; ZAHÁLKA (79) p. 36.  
 †*Nematinion calyculum* Hinde ; JUKES-BROWNE & HILL (25) pp. 68 & 480.  
 †*Pachypoterion compactum* Hinde, and †*P. robustum* Hinde ; JUKES-BROWNE & HILL (25) pp. 68, 264, 481.

## Family NEOPELTIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 149.

## Family SCLERITODERMIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 149.  
*Scleritoderma nodosum*, n. sp., from Ternate, a species nearly allied to *S. flabelliforme* Soll. ; THIELE (68) pp. 54 & 55, pl. iii, figg. 9 & 10.

## Family CLADOPELTIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 149.

## Tribe ANOPLIA.

Diagnosis ; MINCHIN (47) p. 149.

## Family AZORICIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 149.

## Family ANOMOCLADIDÆ.

- List of genera ; MINCHIN (47) pp. 149 & 150 : =suborders *Anomocladina* and *Eutaxicladina* defined ; ZITTEL (82) pp. 50 & 51 respectively.  
 †*Astylospongia* Roem., genus defined ; *A. præmorsa* (Goldf.), figures of sponge and skeleton : ZITTEL (82) p. 50, figg. 61 & 62a.  
 †*Cylindrophyma* Z., genus defined ; *C. milleporata* (Goldf.), figures of sponge and skeletal elements ; ZITTEL (82) p. 51, fig. 63.  
 †*Hindia* Dunc., genus defined ; *H.* sp. skeletal elements figured : ZITTEL (82) p. 51 and fig. 62b. *H.* sp., from New York, Lower Oriskany, p. 307 ; *H. fibrosa* (Roem.), Helderbergian fauna, N. America, p. 278 : SCHUCHERT (58).  
 †*Melonella* Z., genus defined ; ZITTEL (82) p. 51.  
 †*Scytalia pertusa* (Rss.) ; ZAHÁLKA (79) pp. 36, 44.

## Family RHIZOMORINIDÆ.

- Rhizomorina*, defined as suborder ; ZITTEL (82) p. 52.  
 †*Amphithelion* Z., genus defined ; ZITTEL (82) p. 54.  
 †*Astrobolia acuta* (Rss.), ZAHÁLKA (79) p. 36.

- +*Chenendepora* Lamx., genus defined; *C. fungiformis* figured: ZITTEL (82) p. 53, fig. 67. *C. michelini* Hinde; JUKES-BROWNE & HILL (25) p. 480.
- +*Chonella*, sp.; ZAHÁLKA (79) p. 36.
- +*Cnemidiastrum* Z., genus defined; *C. stellatum* (Goldf.), figures of sponge and skeletal elements: ZITTEL (82) p. 52 and fig. 65.
- +*Hyalotragos* Z., genus defined; ZITTEL (82) p. 52.
- +*Jereica* Z., genus defined; *J. polystoma* (Roem.), skeleton figured: ZITTEL (82) p. 53, fig. 66. *J. cylindrica* Hinde; JUKES-BROWNE & HILL (25) p. 480.
- +*Pachinion scriptum* Roem.; ROWE (55) p. 359.
- +*Platychonia* Z., genus defined; ZITTEL (82) p. 52.
- +*Stichophyma tumidum* Hinde; ROWE (55) p. 359. +*S. turbinata* (Rss.); ZAHÁLKA (79) p. 36.
- +*Verruculina* Z., genus defined; *V. auriformis* Roem., figured: ZITTEL (82) p. 53, fig. 68. *V. miliaris* (Rss.), and *V. tenue* (Roem.); ZAHÁLKA (79) p. 36.

(ii) *MONAXONIDA*.

Diagnosed as a *Grade*; MINCHIN (47) p. 150. *Monactinellida*, defined as an *order*; ZITTEL (82) p. 45.

## (a) Order HADROMERINA.

Diagnosis and classification; MINCHIN (47) p. 150: list of families and genera, pp. 2 & 3, analytical table of French species, pp. 20-24; TOPSENT (70). *Oligoceratina* sens. Keller [= *Hadromerina*]; KIESCHNICK (26) pp. 572 & 573.

## 1. Sub-order ACICULINA.

Diagnosis of suborder; MINCHIN (47) p. 150.

## Family COPPATIIDÆ.

Diagnosis of family, p. 265; list of genera comprised in it, p. 2; TOPSENT (70): diagnosis of family and list of genera; MINCHIN (47) p. 150.

*Asteropus incrustans* Lendenfeld, a synonym of *Coppatias johnstoni*; TOPSENT (70) p. 271.

*Astropeplus pulcher* Sollas, a synonym of *Coppatias johnstoni*; TOPSENT (70) p. 270.

*Coppatias* Soll., diagnosis of genus; TOPSENT (70) p. 267. *C. distinctus*, n. sp., from Ternate; THIELE (68) pp. 56 & 57, pl. iii, fig. 12. *C. johnstoni* (O. S.), redescribed with synonymy and distribution; includes *C. inconditus* Tops., p. 3 and pp. 267-276, pl. viii, fig. 1; *C. johnstoni* var. *incrustans* (Tops.), redescribed, with synonymy and distribution, = *C. inconditus* var. *incrustans* Tops., pp. 276-280, pl. viii, fig. 2; TOPSENT (70) [vide etiam *Vioa johnstoni*].

*Dorypleres* Soll., distinct from *Coppatias*, but the generic name *Jaspis* Gray has the priority over it; THIELE (68) p. 58.

*Jaspis* Gray, to replace *Dorypleres* Soll., by priority, type *Vioa johnstoni* O. S.; THIELE (68) p. 58: the genus has no scientific value; TOPSENT (70) p. 270: *J. topsenti*, n. sp., from Ternate; THIELE (68) pp. 58 & 59, pl. iii, fig. 13.

*Spongosorites* Tops., diagnosis of genus, p. 265; transitional between *Aciculida* and the family *Haploscleridae* of *Halichondrina*, p. 267; *S. placenta* Tops., description, with distribution, pp. 265-267, pl. vii, fig. 6: TOPSENT (70).

*Topsentia glabra* (Tops.), note upon spiculation; TOPSENT (70) p. 289.

*Xenospongia johnstoni* Lendenfeld = *Coppatias johnstoni*; TOPSENT (70) p. 271.

## Family STREPTASTERIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 150 : diagnosis of family, p. 280, list of genera comprised in it, p. 2 ; TOPSENT (70).

*Holoxea* Tops., application and character of genus ; THIELE (68) p. 59 : diagnosis of the genus ; TOPSENT (70) p. 282. *H. collectrix*, n. sp., from Ternate ; THIELE (68) pp. 60 & 61, pl. iii, fig. 15. *H. furtiva* Tops., full description, with distribution ; TOPSENT (70) pp. 282-284, pl. viii, fig. 10. *H. valida*, n. sp., from Ternate ; THIELE (68) pp. 59 & 60, pl. iii, fig. 14.

*Spiroxya* Tops., diagnosis of genus, p. 280 ; genus closely allied to *Rhaphidistia* Carter, p. 282 ; *S. heteroclita* Tops., full description, with synonymy and distribution, pp. 280-282, pl. viii, fig. 11 : TOPSENT (70).

## Family TETHYIDÆ.

Diagnosis and list of genera ; MINCHIN (47) p. 150 : diagnosis, p. 284, list of genera, p. 2, and affinities of the family, pp. 289 & 307 ; TOPSENT (70).

*Aaptos adriatica* Gray, vide etiam *Tuberella aaptos*.

*Tethya* Lam., diagnosis of genus ; KIESCHNICK (26) p. 574 : application of the name discussed ; THIELE (68) p. 61 : diagnosis of the genus ; TOPSENT (70) p. 294. *T. affinis*, n. sp., from Christmas Island, allied to *T. japonica* Soll. ; KIRKPATRICK (27) pp. 133 & 134, pl. xii, fig. 1, pl. xiii, figg. 3a-d. *T. corticata* Lend., distinct from *T. lyncurium*, but synonym of *T. japonica* Soll. ; TOPSENT (70) p. 297. *T. ingalli* Bwk., from Christmas Island ; KIRKPATRICK (27) p. 132 : distinct from *T. lyncurium*, but identical with *T. cliftoni* Bwk., *T. robusta* Bwk., and probably also *T. seychellensis*, E. P. Wright, which become synonyms ; TOPSENT (70) p. 296. *T. lyncurium* (L.) Lam., full description with synonymy and distribution ; TOPSENT (70) pp. 294-312, pl. viii, figg. 8, 9, 14, 15. *T. cf. nux* Sel. from Samoa and Ternate ; THIELE (70) pp. 62 & 63, pl. iii, figg. 16 & 17. *T. seychellensis* (E. P. Wright), redescribed ; KIESCHNICK (26) pp. 574 & 575 : from Christmas Island ; KIRKPATRICK (27) p. 133 : from Ternate, redescribed ; THIELE (68) pp. 61 & 62 ; a synonym of *T. ingalli* Bwk. ; TOPSENT (70) p. 296. *Tethyophaena silifica* O. S., a synonym of *Tuberella aaptos* ; TOPSENT (70) p. 287.

*Tuberella* Keller, diagnosis, p. 284, type and unique species, *T. aaptos* (O. S.) Tops., redescribed, pp. 285-294, pl. viii, figg. 12 & 13 ; synonyms *T.* (" *Amorphina* ") *duchassaingii* Tops., p. 287 and *T. tethyoides* Keller, pp. 3 & 287 ; *T. papillata* Keller is certainly a *Polymastia*, probably *P. mammillaris* : TOPSENT (70). [But from the list of synonyms given by the author it would appear that the correct designation of the species termed by him *Tuberella aaptos* should be *Aaptos aaptos*.]

## Family STYLOCORDYLIDÆ.

Diagnosis of family and list of genera ; MINCHIN (47) p. 150 : list of genera ; TOPSENT (70) p. 3.

*Stylocordyla borealis* (Lovén), distribution ; LAMBE (32) p. 163 : its claims to be included in the fauna of France ; TOPSENT (70) p. 6. †*S. radix* ; ZAHÁLKA (78) pp. 80, 93.

## 2. Sub-order CLAVULINA.

Diagnosis ; MINCHIN (47) p. 151 : *Clavulida*, diagnosis ; TOPSENT (70) p. 24 : regarded as one family, *Clavulidæ* ; THIELE (68) p. 56.

## Family CLIONIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 151: diagnosis, p. 24, and list of genera, p. 2; TOPSENT (70).

*Alectona* Crtr., diagnosis of genus, p. 24, affinities of genus with *Thoosa*, *Dotona*, and *Cliona*, pp. 31 & 32: *A. millari* Crtr., redescribed from Banyuls, with full distribution, pp. 24-30, pl. i, figg. 1-3; TOPSENT (70): remarks on spiculation; LENDENFELD in review, p. 925.

*Cliona* Grant, diagnosis of genus, p. 32; *C. alderi* Hanc. and *C. angulata* Hanc., synonyms of *C. celata*, p. 53; *C. caribbæa* Crtr. a synonym of *C. viridis*, p. 87; TOPSENT (70). *C. celata* Grant, systematic position, distribution, organisation, and mode of life; TOPSENT (70) pp. 32-55, pl. i, figg. 5, 6-9, pl. ii, fig. 1: GILSON (19) p. 33: general distribution; LAMBE (32) p. 164. *C. concharum* Thiele, a synonym of *C. vastifica*, p. 70; *C. corallinoides* Hanc., a synonym of *C. vastifica*, p. 68; TOPSENT (70). *C. cretacea* Portl.; ROWE (55) p. 359. *C. dissimilis* R. & D., a synonym of *C. celata*; TOPSENT (70) p. 55. *C. erodens* Dollf.; LERICHE (34) pp. 281 & 283. *C. euryphyllæ* Tops., redescribed and compared with other species, pp. 100 & 101, text-fig. 1a-a'; *C. globulifera* Hanc., a synonym of *C. celata*, p. 54; *C. gorgonioides* Hanc., a synonym of *C. celata*, p. 53; *C. gracilis* Hanc., a synonym of *C. vastifica*, p. 68; *C. hixonii* (Lend.), affinities discussed, shown to be closely allied to *C. celata* and to form with this species and with *C. vastifica* Hanc., *C. carpenteri* Hanc., *C. abyssorum* Crtr., and *C. stationis* Nassonow, a distinct section of the genus, pp. 44 & 68; *C. howsei* Hanc., a synonym of *C. lobata*, p. 76; *C. jullieni* Tops., redescribed and compared with other species, pp. 83 & 101, text-fig. 1, b-b'; *C. labyrinthica* Hanc., description, with distribution, pp. 102-104, pl. iii, fig. 7; *C. linearis* Soll., a synonym of *C. celata*, p. 43; *C. lobata* Hanc., full description, with synonymy and distribution, pp. 70-77, pl. ii, figg. 2 & 10, pl. iii, fig. 1, and pl. iv, fig. 1; *C. mazatlensis* Hanc., synonym of *C. vastifica*, p. 68; TOPSENT (70). *C. mucronata* Sollas, from Funafuti; KIRKPATRICK (28) p. 352. *C. northumbrica* Hanc., synonym of *C. vastifica*; TOPSENT (70) p. 68. *C. orientalis*, n. sp., from Ternate; perhaps identical with *Suberites coronarius* Carter, from Mergui Archipelago, but not with *Suberites coronarius* Carter, from West Indies; THIELE (70) pp. 71 & 72, pl. iii, fig. 24. *C. (Cliona)? [sic] ovalis* Frič; ZAHÁLKA (78) p. 93. *C. pruvoti*, n. sp., from Banyuls; TOPSENT (70) pp. 104-106, pl. iii, fig. 6. *C. purpurea* Hancock, type specimen re-examined, and to be placed in the new genus *Dyscliona*, q. v.; KIRKPATRICK (28) p. 353. *C. radiata* Hanc., probably not specifically distinct from *C. celata*; TOPSENT (70) p. 54. *C. schmidtii* (R.), full description, with synonymy and distribution; TOPSENT (70) pp. 77-84, pl. ii, fig. 15 and pl. iii, fig. 5: from Funafuti, 25-45 fathoms; KIRKPATRICK (28) p. 352. *C. subulata* Soll., synonym of *C. viridis*; TOPSENT (70) p. 87. *C. sulphurea* (Desor) Leidy, synonym of *C. celata*; TOPSENT (70) pp. 32, 34, 55: recorded as common at Beaufort; WILSON (77) p. 350. *C. vastifica* Hanc., pp. 56-70, pl. ii, figg. 3-9; *C. vermifera* Hanc., occurrence on French coast doubtful, p. 4; *C. viridis* (O. S.) Gray, pp. 84-98, pl. ii, figg. 11-14, pl. iii, figg. 2 & 3, pl. iv, fig. 2; *C. viridis* (O. S.) var. *carteri* (R.), full descriptions with synonymy and distribution, pp. 98-102, pl. iii, fig. 4; *C. warreni* Crtr., distinct from *C. celata* but identical with *C. quadrata* Hanc., p. 54; TOPSENT (70).

*Cribrella labiata* Keller, synonym of *Cliona viridis*; TOPSENT (70) p. 88.

*Dotona* Crtr., affinities of the genus and the unique species, *D. pulchella*, with *Alectona* and *Cliona*; TOPSENT (70) p. 31.



- Dyscliona*, **n.g.** of *Clionidæ*; type species *D. davidi*, **n.sp.**, from Funafuti 25-45 fathoms; to include also *Cliona purpurea* Hancock; KIRKPATRICK (28) pp. 352-354, pl. xiv, fig. 1, *a-g*.
- Osculina polystomella* O. S., synonym of *Cliona viridis*; TOPSENT (70) p. 87.
- Papillella* (*Papillina*) *quadrata* (Hanc.) Lend. and *P. suberea* (O. S.) synonyms of *Cliona celata* Grant, p. 34, pp. 39 & 40, and p. 55; *Papillina nigricans* O. S., synonym of *Cliona viridis*, p. 87; TOPSENT (70).
- Raphyrus celatus* Gray and *R. griffithsii* Bwk., both names denote merely the "raphyroid" stage of growth attained by *Cliona celata*, and therefore to be abolished, p. 49; *R. hixonii* Lend. to be *Cliona hixonii*, q.v., p. 41; TOPSENT (70).
- Thoosa* Hanc.; affinities of the genus with *Alectona*; *T. letellieri* a transitional type, p. 31; *T. hancocki* includes *Vioa ramosa* Lend., p. 88 footnote; TOPSENT (70).
- Vioa granti* O. S., probably identical with *Cliona vastifica* Hanc.; TOPSENT (70) p. 69. "*Vioa johnstonii* O. S."; type of genus *Jaspis* Gray, q. v.; THIELE (68) p. 58: = *Coppatias johnstoni*, q. v.; TOPSENT (70). *V. ramosa* Lendenfeld, a synonym of *Thoosa hancocki*, p. 88 footnote; *V. schmidtii* Ridley non Carter = *Cliona schmidtii*, p. 78; *V. typica* Graeffe, synonym of *Cliona viridis*, p. 88: TOPSENT (70).

### Family SPIRASTRELLIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 151, diagnosis, p. 107, and list of genera comprised, p. 2; TOPSENT (70).

*Hymedesmia* Bwk., diagnosis and history of the genus, with criticism of species referred to it and belonging to it; genotype *H. stellata* Bwk., pp. 110-114; *H. acutostellata* Hanc. is a *Vibulinus* (*Axinellidæ*), p. 114; *H. bistellata* (O. S.), Tops., full description, with synonymy and distribution, pp. 125-129, pl. iii, figg. 13 & 16; *H. hallezi* Tops., full description, with distribution, pp. 119 & 120, pl. iii, fig. 9; *H. hallezi*, var. *crassa*, **n. var.**, from British Channel, French Coast, pp. 120 & 121, pl. iii, fig. 10; *H. indistincta* Bwk., a synonym of *Plocamia ambigua* (Bwk.) (*Pecilioscleridæ*, *Bubarinæ*), pp. 112 & 113; *H. inflata* Bwk. is a *Pytheas* (*Pecilioscleridæ*, *Ectyoninæ*), p. 113; *H. johnsoni* Bwk. is a *Hamacantha* (*Pecilioscleridæ*, *Esperellinæ*), p. 113; *H. mixta* Tops., full description, with distribution, pp. 122 & 123, pl. iii, fig. 11; *H. occulta* Bwk. is a *Hymenaphia* (*Pecilioscleridæ*, *Ectyoninæ*) p. 113; *H. pansa* Bwk. is a *Myxilla*, p. 113; *H. peachi* Bwk. is a *Hymenaphia* (*Pecilioscleridæ*, *Ectyoninæ*), p. 113; *H. pilata* Bwk. and *H. pulchella* Bwk. belong to genus *Myxilla*, p. 113; *H. polita* Ridl. is an Ectyonine, probably a *Microciona*, p. 113; *H. radiata* Bwk. belongs to genus *Myxilla*, p. 111; *H. simplicissima* Bwk. is a *Suberites*, p. 113; *H. stellata* Bwk., full description, with synonymy and distribution, pp. 114-119, pl. iii, fig. 15; *H. tenuicula* Bwk. is a synonym of *Terpios fugax*, p. 113; *H. tristellata* Tops., full description, with distribution, pp. 129-131, pl. iii, fig. 14; *H. unistellata* Tops., full description, with distribution, pp. 123-125, pl. iii, fig. 12; *H. unistellata*, var. *chondrilloides*, from the Azores, p. 125; *H. zetlandica* Bwk. belongs to genus *Leptosia* (*Pecilioscleridæ*, *Dendorycinæ*), p. 111: TOPSENT (70). For further notes on the spiculation of *H. bistellata* and *H. tristellata* see LENDENFELD in review, p. 925.

*Latrunculia clavigera*, **n.sp.**, from Funafuti, 86 fathoms; KIRKPATRICK (28) pp. 354 & 355, pl. xiv, fig. 2, *a-e*.

- Spirastrella* O. S., diagnosis of genus, KIESCHNICK (26) p. 575; TOPSENT (70) p. 107. *S. bistellata* Lend. is distinct from *Hymedesmia bistellata* O. S., and perhaps is identical with *H. decumbens* Ridl.; TOPSENT (70) pp. 113 & 128. *S. carnosa* Tops., from Christmas Island; KIRKPATRICK (27) p. 134. *S. cunctatrix* O. S., figure of spiraster, and distribution; TOPSENT (70) pp. 8 & 101, text-fig. 1c, and p. 108. *S. cylindrica* Kieschnick [(24) Zool. Rec. 1896] identical with *S. vagabunda* Ridley; THIELE (68) pp. 56, 70, 71, pl. iii, fig. 23. *S. decumbens* Lendenfeld, from Adriatic, = *S. cunctatrix*; TOPSENT (70) p. 108. *S. decumbens* R. & D., var. *robusta*, **n. var.**, from Christmas Island; KIRKPATRICK (27) pp. 134 & 135. *S. dilatata* Kieschnick [(24) Zool. Rec. 1896], identical with *S. spinispirulifera* Crtr.; THIELE (68) pp. 56, 69, 70, pl. iii, fig. 22. *S. lacunosa*, **n. sp.**; KIESCHNICK (26) p. 575. *S. minax* Tops., full description, with synonymy and distribution; TOPSENT (70) pp. 107-110, pl. iii, fig. 8. *S. semilunaris* Lindgren, a synonym of *S. decumbens*; KIRKPATRICK (27) p. 134. *S. spiculifera*, **n. sp.**; KIESCHNICK (26) p. 575.
- Stelligera* Gray, used by Lendenfeld for *Hymedesmia*, is a synonym of *Vibulinus* Gray (*Axinellide*); TOPSENT (70) p. 112.
- Timea* Gray 1867 for *Hymedesmia stellata* Bwk., becomes synonym of *Hymedesmia*; TOPSENT (70) p. 112.

### Family POLYMASTIDÆ.

- Diagnosis of family; KIESCHNICK (26) p. 575: diagnosis and list of genera; MINCHIN (47) p. 151: diagnosis, p. 131, and list of genera, p. 2; TOPSENT (70).
- Polymastia* Bwk., diagnosis of genus; KIESCHNICK (26) p. 576: TOPSENT (70) p. 131. *P. affinis* Thiele, a synonym of *P. mammillaris*, pp. 135, 147; *P. bulbosa* Bwk., a synonym of *P. robusta*, p. 150: TOPSENT (70). *P. laganooides* Lambe, distribution; LAMBE (32) p. 163. *P. mammillaris* (O. F. M.) Bwk., complete distribution; LAMBE (32) p. 162: recorded from Amboina; KIESCHNICK (26) p. 576: full description with synonymy and distribution; TOPSENT (70) pp. 131-147, pl. iv, figg. 8-13. *P. ornata* Bwk., a synonym of *P. robusta*; TOPSENT (70) pp. 150, 151. *P. robusta* Bwk., distribution; LAMBE (32) p. 163: full description, with synonymy and distribution; TOPSENT (70) pp. 147-157, pl. iv, figg. 3-7, 14. *P. spinula* Bwk., probably identical with *P. mammillaris*, p. 145; *P. uberrima* for *Rinalda uberrima* O. S., p. 152; TOPSENT (70).
- Quasillina*, diagnosis of genus, p. 157; *Q. brevis* (Bwk.) Norm., full description with synonymy and distribution, pp. 158-164, pl. vi, figg. 11 & 12: TOPSENT (70)
- Rinalda arctica* Merejk., synonym of *Polymastia mammillaris*, p. 136; *R. uberrima* O. S., a *Polymastia*, p. 152; TOPSENT (70).
- Tentorium semisuberites* O. S., from Davis Strait, 150 fathoms, and East Greenland, 250 fathoms; LAMBE (31) p. 25: general distribution; LAMBE (32) p. 163: figured; MINCHIN (47) p. 20, fig. 31.
- Trichostemma hemisphericum* M. Sars, distribution; LAMBE (32) p. 163: includes *Radiella sol*; TOPSENT (70) p. 136.

### Family SUBERITIDÆ.

- Diagnosis of family; KIESCHNICK (26) p. 576: diagnosis and list of genera; MINCHIN (47) p. 151: diagnosis, p. 164, and list of genera comprised, p. 2; TOPSENT (70).
- Ficulina* Gray, definition, p. 203: genotype *F. ficus* L., fully described

- with synonymy and distribution, pp. 203–224, pl. v, figg. 6–15; TOPSENT (70) [vide etiam *Suberites ficus* and *S. suberea*].
- Laxosuberites*, new diagnosis of genus and statement of species referable to it, pp. 184 & 185; *L. ectyoninus*, n. sp., from Banyuls, pp. 189–192, pl. vii, figg. 11 & 12; *L. rugosus* (O. S.) Tops., full description, with synonymy and distribution, pp. 185–189, pl. v, figg. 1–4; TOPSENT (70) [vide etiam *Suberites capillitium*, *S. sericeus*, and *S. spongiosus*.]
- Prosuberites*, diagnosis of genus, p. 174; *P. epiphytum* (Lam.) Tops.: full description, with synonymy and distribution, pp. 179–184, pl. vi, fig. 15; *P. longispina* Tops., full description, with distribution, pp. 174–177, pl. vi, fig. 14; *P. rugosus* Tops., full description, with distribution, pp. 177–179, pl. vi, fig. 13; TOPSENT (70).
- Pseudosuberites*, diagnosis of genus; TOPSENT (70) p. 165. *P. andrewsi*, n. sp., from Christmas Island; KIRKPATRICK (27) p. 135, pl. xii, figg. 2a–b, pl. xiii, fig. 7. *P. hyalinus* (R. & D.) Tops., full description, with synonymy and distribution, pp. 170–174, pl. vii, fig. 9; *P. sulphureus* (Bean) Tops., full description, with synonymy and distribution, pp. 165–170, pl. v, fig. 5 and pl. vii, fig. 10; TOPSENT (70).
- Rhizaxinella*, diagnosis of genus, p. 243; *R. clavigera* Keller, synonym of *R. pyrifer*, p. 245; *R. elongata* (R. & D.) Tops., full description, with synonymy and description, pp. 249–252, pl. viii, figg. 3–5; *R. pyrifer* (D. Ch.) Vosm., full description, with synonymy and distribution, pp. 243–249, pl. viii, figg. 6 & 7; TOPSENT (70).
- Suberanthus flavus* Lendenfeld non Lieberkühn, a synonym of *Pseudosuberites sulphureus*; TOPSENT (70) p. 170.
- Suberites*, diagnosis of genus, KIESCHNICK (26) p. 576; TOPSENT (70) p. 224. *S. alveus* Hansen, a species of doubtful value, perhaps identical with *Polymastia robusta*; TOPSENT (70) pp. 136 & 151. *S. capillitium* Tops., enters the genus *Laxosuberites*; TOPSENT (70) p. 184: figured; RICHARD (51) pl. ix, fig. 10. *S. carnosus* (Johnst.) Gray, full description, with synonymy and distribution, and of varieties *depressus*, *flavus*, *incrusters*, *ramosus* and *typicus*; TOPSENT (70) pp. 233–243, pl. vii, figg. 1–5. *S. concinnus* Lambe, distribution; LAMBE (32) p. 162. *S. conica* Hansen, a species of doubtful value, perhaps identical with *Polymastia mammillaris*; TOPSENT (70) p. 136. *S. coronarius* Carter, vide etiam *Cliona orientalis*. *S. domuncula* (Oliv.) Ndo., full description, with synonymy and distribution, pp. 225–233, pl. vi, figg. 1–9; *S. epiphytum* to be placed in genus *Prosuberites*, pp. 3 & 181; TOPSENT (70). *S. ficus* (L.) Johnst., general distribution; LAMBE (32) p. 161, = type species of genus *Ficulina* Gray, q. v.; TOPSENT (70) pp. 3 & 203–217. *S. flavus* Liebk., a variety of *S. carnosus*; TOPSENT (70) p. 236. *S. hispidus* Bwk., distribution; LAMBE (32) p. 161. *S. incrusters* Hansen, a species of doubtful value; TOPSENT (70) p. 136. *S. mollis*, n. sp., KIESCHNICK (26) p. 576, pl. xlv, fig. 4. *S. montalbidus* Carter, from Hudson Bay etc.; LAMBE (30) p. 278 and (31) pp. 24 & 25: general distribution; LAMBE (32) p. 162: a synonym of *Ficulina ficus*, but *S. montalbidus* Lambe = *Ficulina lütkeni*, perhaps a variety of *F. ficus*; TOPSENT (70) pp. 206, 207, & 213. *S. montiniger* Crtr., distribution; LAMBE (32) p. 162. *S. oculatus* Kieschnick [(24) Zool. Rec. 1896] is a *Ciocalyptra* [Avinellidae], q. v.; THIELE (68) p. 75. *S. pacifica* Lambe, distribution; LAMBE (32) p. 162. *S. paludum* O. S., a synonym of *Laxosuberites rugosus*, pp. 8 & 185; *S. placenta* Thiele, a synonym of *Ficulina ficus*, p. 213; *S. radians* Hansen, a species of doubtful value, perhaps a *Trichostemma*, p. 136; TOPSENT (70). *S. radiatus* Kieschnick [(24) Zool. Rec. 1896] a doubtful species; THIELE (70) p. 56. *S. sericeus* Thiele, referred to genus *Laxosuberites*; TOPSENT (70) p. 184. *S. simplex* Lambe, distribution; LAMBE (32) p. 162. *S. spissus* Tops.,

a synonym of *Tuberella aaptos*, p. 288; *S. spongiosus* O. S., referred to genus *Lavosuberites*, p. 184; TOPSENT (70). *S. suberea* Johnst., distribution; LAMBE (32) p. 161: a synonym of *Ficulina ficus*, var. *suberea*; TOPSENT (70) p. 211. *S. tenuiculus* Bwk., a synonym of *Terpios fugax* Duch. et Mich.; TOPSENT (70) p. 3. *S. wilsoni*, purple pigment studied; MACMUNN (45) pp. 337-342, 346 & 347.

*Terpios*, new diagnosis of genus, p. 192: its distinctness from *Suberites*, p. 196; *T. fugax* Duch. et Mich., full description, with synonymy and distribution, pp. 193-203, pl. vi, fig. 10; TOPSENT (70).

### Family MESAPIDÆ.

*Mesapidae*, n. fam. of Clavulina for *Mesapos* Gray and *Tethyspira* Tops., diagnosis; TOPSENT (70) p. 252.

*Mesapos* Gray, diagnosis, p. 252, and affinities, p. 256; *M. stellifera* (Bwk.) Gray, full description, with synonymy and distribution, pp. 253-257, pl. vii, fig. 8: TOPSENT (70).

*Tethyspira* Tops., diagnosis; TOPSENT (70) p. 257: the genus should be referred to the *Éctyoninæ* (*Halichondrina*); LENDENFELD in review, p. 925. *T. spinosa* (Bwk.) Tops., full description, with synonymy and distribution; TOPSENT (70) pp. 257-265, pl. vii, fig. 7, and text-fig. 2, p. 262.

### (b) Order HALICHONDRINA.

Diagnosis of order; MINCHIN (47) p. 151. Oligosilicina, sensu Keller, = Halichondrina, diagnosis and characters; KIESCHNICK (26) pp. 563 & 564.

### Family HAPLOSCLERIDÆ.

Diagnosis of family and of sub-families *Chalininæ*, *Renierinæ*, *Spongilinaæ*, *Gelliodinæ*, and *Phleodictyinæ* with list of genera; MINCHIN (47) pp. 151 & 152.

### Sub-family CHALININÆ.

*Chalina* Bwk., diagnosis of genus; KIESCHNICK (26) p. 567. *C. arbuscula*, recorded as common at Beaufort; WILSON (77) p. 350. *C. elastica*, n. sp.; KIESCHNICK (26) p. 567. *C. oculata* (Pallas), distribution; LAMBE (32) p. 155: figured; MINCHIN (47) p. 21, fig. 34.

*Pachychalina conulosa*, n. sp.; KIESCHNICK (26) p. 568, pl. xlv, fig. 8.

*P. fibrosa*, R. & D.; KIRKPATRICK (28) p. 356.

*Phylosiphonia elastica*, n. sp., pp. 566 & 567, pl. xlv, fig. 6: *P. erecta*, n. sp., p. 566; KIESCHNICK (26).

*Siphochalina oculata* L. [sic]; GILSON (19) p. 33.

*Siphonochalina* O. S., characters, p. 567; *S. fragilis*, n. sp., p. 567, pl. xlv, fig. 5; KIESCHNICK (26).

*Toxochalina* Ridl., diagnosis of genus; KIESCHNICK (26) p. 565. *T. borealis* Lambe, distribution; LAMBE (32) p. 155. *T. schulzei*, n. sp.; KIESCHNICK (26) p. 566, pl. xlv, fig. 7.

### Sub-family RENIERINÆ.

*Eumastia sitiens* O. S., distribution; LAMBE (32) p. 154.

*Gellius arcoferus* Vosm., and *G. flagellifer* R. & D., distribution; LAMBE (32) p. 155. *G. laurentinus*, n. sp., from Gulf of St Lawrence, 100 fathoms, Strait of Belle Isle, 60 fathoms, Davis Strait, 130 fathoms; LAMBE (31) pp. 20 & 21, pl. i, figg. 1, 1a; LAMBE (32) p. 155. *G. sp. ?*,



- nearest to *G. glacialis* and *G. flagellifer*, from near Gijón, Coast of Asturias, 260 meters; ORUETA (48).
- Halichondria disparilis* Lambe, distribution; LAMBE (32) p. 154. "*H. farinaria*" Bwk., a synonym of *Ficulina ficus*, var. *farinaria*; TOPSENT (70) p. 212. *H. panicea* Johnston, distribution; LAMBE (32) p. 154. *H. solida* R. & D., and *H. solida* var. *rugosa* R. & D., from Christmas Island; KIRKPATRICK (27) pp. 139 & 140.
- Petrosia exigua*, **n. sp.**, from Christmas Island; KIRKPATRICK (27) p. 139, pl. xii, fig. 7, pl. xiii, fig. 4. *P. hispida* R. & D., distribution; LAMBE (32) p. 154.
- Reniera cinerea* Grant, distribution; LAMBE (32) p. 154. *R. innominata*, **n. sp.**, from Christmas Island and Marie Louise Island, Amirante Group; KIRKPATRICK (27) pp. 138 & 139, pl. xii, figg. 6, 6a, pl. xiii, figg. 5a-b. *R. mollis* Lambe, from Labrador Coast, and near the entrance to the Baie des Chaleurs, etc.; LAMBE (31) p. 19; general distribution; LAMBE (30) p. 277 and (32) p. 155. *R. rufescens* Lambe, distribution; LAMBE (32) p. 154.

### Sub-family SPONGILLINÆ.

- Ephydatia blembingia*, **n. sp.**, from the river Blembing, Siamese Malay States, approaches *E. plumosa* Crtr. more closely than any other species; EVANS (15) pp. 72-81, pl. 1, and pl. 4. *E. fluviatilis* Liebk.; LEVANDER (35) p. 3; STILES (67) p. 331; WELTNER (74) p. 522, pl. xlii, fig. 9. *E. mülleri* Liebk.; STENROOS (66) pp. 39, 84, & 233; ZSCHOKKE (83) p. 73. *Ephydatia* [sic] *mülleri* Liebk.; HEMPEL (21) p. lxii. *E. multidentata* (Weln.), from Burnett River, Queensland: removed from genus *Tubella* and redescribed; WELTNER (74) pp. 519-523, pl. xlii, fig. A, and figg. 1-8.
- Euspongilla*; see *Spongilla*.
- Heteromeyenya macouni*, **n. sp.**, from Sable Island, in the Atlantic Ocean, 100 miles from Nova Scotia; MACKAY (44).
- Lubomirskia baicalensis*, something about it in Russian; ANON (2).
- Spongilla* seu *Euspongilla*; *S. fragilis* Leidy; STENROOS (66) pp. 39, 81, 84 & 233; WELTNER (74) p. 523; ZSCHOKKE (83) p. 73. *S. lacustris* auct., LEVANDER (36) p. 9; STENROOS (66) pp. 39, 81, 84 and 233; STILES (67) p. 331; ZSCHOKKE (83) p. 73. *S. lacustris* var. *lieberkühni* Noll; HEMPEL (21) p. lxii.
- Spongillid*, sp. incert., from Burnett River, Queensland; WELTNER (74) p. 523.
- Tubella multidentata* Weln., to be placed in genus *Ephydatia*; WELTNER (74) p. 519.

### Sub-family GELLIODINÆ.

- Chondropsis ceratosus*, **n. sp.**, from Funafuti, 30 fathoms; KIRKPATRICK (28) pp. 355 & 356, pl. xv, fig. 3a-c.
- Gellio(i)des* Ridl., diagnosis of genus [placed amongst "*Chalinidæ*"], p. 565; *G. ramosa*, **n. sp.**, p. 565, pl. xlv, fig. 3; KIESCHNICK (26).

### Sub-family PHLEODICTYINÆ.

- Rhizochalina pellucida* R., p. 138; *R. sessilis*, **n. sp.**, from Christmas Island, allied to *Pellina eusiphonia* R., p. 138, pl. xii, fig. 5, pl. xiii, fig. 8; KIRKPATRICK (27).

## Family PÆCILOSCLERIDÆ.

Diagnosis of family and of sub-families *Esperellinæ*, *Dendorycinæ*, *Ectyoninæ*, and *Bubarinæ*, with list of genera ; MINCHIN (47) p. 152.

## Sub-family ESPERELLINÆ.

- Chondrocladia* Wyv. Th., characters of genus ; KIESCHNICK (26) p. 571.  
*C. alaskensis* Lambe, distribution ; LAMBE (32) p. 158. *C. dura* **n. sp.** ; KIESCHNICK (26) p. 571. *C. pulchra* Lambe, distribution ; LAMBE (32) p. 158. *C. ramosa*, **n. sp.**, p. 571, pl. xlv, fig. 11 ; *C. sessilis*, **n. sp.**, pp. 571 & 572 ; KIESCHNICK (26).  
*Cladorhiza abyssicola* Sars, distribution ; LAMBE (32) p. 158. *C. cupressiformis* Fristedt non Carter, to be *Esperella fristedti*, **nom. nov.** ; LAMBE (31) p. 21. *C. grandis* Verrill (? syn. *C. nobilis* Fristedt), and *C. nordenskiöldii* Frist., distribution ; LAMBE (32) p. 158.  
*Desmacella* O. S., genus diagnosed ; KIESCHNICK (26) p. 568. *D. sp.* ; KIRKPATRICK (27) p. 137. *D. aberrans* Tops., figured ; RICHARD (51) pl. ix, fig. 7. *D. fragilis*, **n. sp.** ; KIESCHNICK (26) p. 568, pl. xlv, figg. 53-56. *D. peachii*, var. *grœnlandica* Frist., and *D. pennata* Lambe, distribution ; LAMBE (32) p. 156.  
*Desmacidon* (*Homœodictya*) *palmata* Johnst., distribution ; LAMBE (32) p. 159.  
*Esperella adherens* Lambe, distribution ; LAMBE (32) p. 156. *E. fristedtii*, **nom. nov.**, for *Cladorhiza cupressiformis* Fristedt, non Carter, from Davis Strait, 100, 130 & 200 fathoms, and Siberian Arctic Ocean ; LAMBE (31) pp. 21 & 22, pl. i, figg. 2, 2a-h ; LAMBE (32) p. 157. *E. helios* (Frist.), *E. hispida* Lambe, and *E. lingua* Bwk., distribution ; LAMBE (32) p. 156. *E. minuta*, **n. sp.**, from Davis Strait, 200 fathoms ; LAMBE (31) p. 23, pl. i, figg. 3, 3a-c ; LAMBE (32) p. 157. *E. modesta* Lambe, *E. occidentalis* Lambe, and *E. serratohamata* Crtr., distribution ; LAMBE (32) p. 157.  
*Esperiopsis* Carter, characters of the genus ; KIESCHNICK (26) p. 572. *E. laxa* Lambe, *E. quatsinoensis* Lambe, *E. rigida* Lambe, and *E. vancouverensis* Lambe, distribution ; LAMBE (32) pp. 157 & 158. *E. viridis*, **n. sp.** ; KIESCHNICK (26) p. 572, pl. xlv, fig. 12, pl. xlv, figg. 51 & 52.  
*Hamacantha johnsoni* Gray, figured ; RICHARD (51) pl. ix, fig. 9. [Vide etiam *Hymedesmia johnsoni*.]  
*Joyeuxia viridis* Tops., figured ; RICHARD (51) pl. ix, fig. 8.  
*Raphiodesma affinis*, **n. sp.**, Great Britain ; WALLER (72) p. 256, pl. 14.  
*Stylotella columella*, see II, B, ii, d. *S. sp.* from Christmas Island, pp. 137 & 138 ; *S. irregularis*, **n. sp.**, from Christmas Island, allied to *Petrosia contignata* Thiele, p. 137, pl. xii, fig. 4, pl. xiii, figg. 6a-d ; KIRKPATRICK (27).

## Sub-family DENDORYCINÆ.

- Iophon chelifer* R. & D., from Gulf of St. Lawrence, 100 fathoms, and Davis Strait ; LAMBE (31) pp. 23 & 24: general distribution ; LAMBE (32) p. 159.  
*Iotrochota baculifera* R., var. *tumescens*, **n. var.**, from Christmas Island ; KIRKPATRICK (27) pp. 136 & 137, pl. xiii, fig. 1: *I. magna* Lambe, distribution ; LAMBE (32) p. 159.  
*Tedania fragilis* Lambe, distribution ; LAMBE (32) p. 155: *T. lewis*, **n. sp.**, from Funafuti, 50-70 fathoms ; KIRKPATRICK (28) p. 355, pl. xiv, fig. 4, a-e.

## Sub-family ECTYONINÆ.

- Agelas gracilis* Whitelegge; KIRKPATRICK (28) p. 346.  
*Clathria delicata* Lambe, *C. lævigata* Lambe, and *C. loveni* Frist., distribution; LAMBE (32) p. 160.  
*Echinodictyum* Ridl., characters of genus, p. 570; *E. conulosum*, **n. sp.**, pp. 570 & 571; *E. lacunosum*, **n. sp.**, p. 570, pl. xlv, fig. 9: KIESCHNICK (26).  
*Hymeraphia spiniglobata* Crtr., is a *Hymedesmia* (*Spirastrellidæ*); TOPSENT (70) p. 113. [Vide etiam *Hymedesmia*.]  
*Lissomyxilla* Hanitsch, genus not accepted; TOPSENT (70) p. 265.  
*Microcionia dubia*, **n. sp.**, from Christmas Island; KIRKPATRICK (27) p. 136, pl. xii, figg. 3 & 3 a, pl. xiii, figg. 2 a-f. *M. prolifera*, recorded as common at Beaufort; WILSON (77) p. 350.  
*Myxilla amaknakensis* Lambe; *M. barentsi* Vosm.; *M. bekringensis* Lambe; *M. firma* Lambe; *M. incrustans* Johnst.; *M. lacunosa* Lambe; *M. parasitica* Lambe; and *M. roseacea* Lieb.: distribution; LAMBE (32) pp. 159 & 160.  
*Ophlitaspongia seriata* Bwk., figured; MINCHIN (47) p. 20, fig. 32.  
*Plumohalichondria plumosa*, see II, B, ii, d.  
*Rhaphidophylus* Ehlers, diagnosis of genus, p. 569; *R. cylindricus*, **n. sp.**, p. 569, pl. xlv, fig. 10; *R. ramosus*, **n. sp.**, pp. 569 & 570, pl. xlv, figg. 47-50; KIESCHNICK (26).  
*Stylostichon dendyi* Tops., figured; RICHARD (51) pl. ix, fig. 6.

## Sub-family BUBARINÆ.

- Plocamia manaarensis* Crtr., distribution; LAMBE (32) p. 161.

## Family AXINELLIDÆ.

- Diagnosis of family, with list of genera; MINCHIN (47) p. 153.  
*Acanthella* O. S., diagnosis; KIESCHNICK (26) p. 568. *A. acuta*, see II, B, ii, d. *A. costata*, **n. sp.**; KIESCHNICK (26) p. 568.  
*Axinella flustra* Tops., figured; RICHARD (51) pl. ix, fig. 5. *A. rugosa* Bwk., distribution; LAMBE (32) p. 161. †*A. stylus* Hinde; JUKES-BROWNE & HILL (25) p. 480.  
*Ciocalypta*, characters of genus (placed in the family "*Clavulidæ*"), pp. 73 & 74; *C. fætida* D., p. 75, pl. iii, fig. 26; *C. oculata* Kieschn., p. 75, pl. iii, fig. 27; *C. sacciformis*, **n. sp.**, p. 76, pl. iii, fig. 28; *C. simplex*, **n. sp.**, p. 76, pl. iii, fig. 29; all from Ternate: THIELE (68).  
*Hymeniacion conulosum* Tops.; KIRKPATRICK (27) pp. 135 & 136. "*H. foliatus*" Bwk., distinct from *Suberites carnosus*, p. 243; "*H. gelatinosa*" Bwk. 1866, a synonym of *Terpios fugax* (*Suberitidæ*), p. 196; *H. sanguinea* Bwk., a doubtful species, perhaps identical with *H. caruncula*, p. 261; "*H. suberea*" Bwk., a synonym of *Ficulina ficus*, pp. 209-211; "*H. tenebrosus*" Bwk., a synonym of *Cliona celata*, p. 54; "*H. virgultosa*" Johnst., a synonym of *Ficulina ficus*, var. *virgultosa*, p. 211: TOPSENT (70).  
*Leucophlæus* Carter, relations of the genus to *Ciocalypta*; THIELE (70) p. 74.  
*Phakellia dalli* Lambe, distribution; LAMBE (32) p. 161. *P. ventilabrum* Johnst., from Davis Strait; LAMBE (31) p. 24: general distribution; LAMBE (30) p. 277 and (32) p. 161: figured; MINCHIN (47) p. 22, fig. 35.

## MONAXONIDA INCERTÆ SEDIS.

- †*Climacospongia* Hinde, characters and occurrence; ZITTEL (82) p. 46.

## (iii) KERATOSA.

Diagnosis; MINCHIN (47) p. 153.

## (a) DICTYOCERATINA.

*Dictyoceratina*, **nom. nov.** for order *Monoceratina* Lendenfeld, with diagnosis; MINCHIN (47) p. 153.

## Family SPONGIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 153: characters of family; SCHULZ (60) p. 530.

*Cacospongia* O. S., characters of genus, pp. 534 & 535; *C. amorphia* Pol., redescribed, pp. 536 & 537; SCHULZ (60). *C. dendroides*, vide etiam *Hircinia fusca*. *C. erecta*, **n. sp.**, pp. 535 & 536, pl. xliii, figg. 5-7; *C. oligoceras* Pol., redescribed, pp. 537 & 538: SCHULZ (60).

*Carteriospongia* Hyatt, characters of genus, p. 532; *C. radiata* Hyatt (= *Phyllospongia pennatula* Ldf.), redescribed, pp. 532 & 533; *C. radiata*, var. *dulsiana* Hyatt, redescribed, pp. 533 & 534: SCHULZ (60).

*Euspongia* sp. from Christmas Island; KIRKPATRICK (27) p. 128. *E. distans*, **n. sp.**, pp. 531 & 532, pl. xliii, figg. 1-4; *E. officinalis*, var. *adriatica* F. E. S., from Thursday Island and Amboina, pp. 530 & 531: SCHULZ (60).

*Hircinia* Ndo., characters of genus; SCHULZ (60) p. 538: to be kept distinct from *Polyfibrospongia*; KIRKPATRICK (28) p. 358. *H. conulosa* Ldf. = *Oligoceras conulosum* R., redescribed, pp. 539 & 540; *H. fusca* Ldf. = *Cacospongia dendroides*, var. *dura* Pol., redescribed, pp. 538 & 539; *H. gigantea* Ldf. = *H. horrens* R., redescribed, pp. 540 & 541: SCHULZ (60).

*Oligoceras conulosum*, vide etiam *Hircinia*.

*Phyllospongia pennatula* Ldf., vide etiam *Carteriospongia radiata* Hyatt.

*Polyfibrospongia* Bowerbank, genus diagnosed, p. 358; to be kept distinct from *Hircinia*, with two spp., *P. sweeti*, **n. sp.**, and *P. flabellifera* Bwk.; *P. gigantea* and *P. fasciculata* to be put under *Hircinia*; *P. sweeti*, **n. sp.**, from Funafuti, 86 fathoms, nearly related to *P. flabellifera* Bwk., p. 359, pl. xv, fig. 2, a-c: KIRKPATRICK (28).

*Stelospongos cavernosus* Pallas, var. *pyriformis* Lend., from Funafuti; KIRKPATRICK (28) p. 358.

## Family SPONGELIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 153: characters of family; SCHULZ (60) p. 541.

*Psammopemma purpureum* Crtr., from Funafuti, 50 fathoms; synonyms *Pseudoceratina durissima* Crtr., and *Holopsamma fuliginosa* Crtr.; KIRKPATRICK (28) p. 358.

*Spongelia*, characters of genus; SCHULZ (60) p. 542. *S. sp.*; KIRKPATRICK (27) p. 128. *S. pallescens fragilis*, var. *incrustans* F. E. S., redescribed; SCHULZ (60) pp. 542 & 543.

†*Spongelites*, **n. g.** of *Spongelidæ*, for *S. fellenbergi*, **n. sp.**, from the Lower Cretaceous (Berrias-Stufe), not from the Middle Jurassic (Dogger), of the Bernese Oberland; ROTHPLETZ (52) pp. 154-157, and (53) pp. 388 & 389.



## Family APLYSINIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 154.

*Luffariella geometrica*, **n. sp.**, from Funafuti, 30 fathoms, nearly allied to *L. calyx* Lend., p. 357, pl. xv, fig. 1, *a-c*; *L. variabilis* Pol., from Funafuti, 25–80 fathoms, pp. 356 & 357: KIRKPATRICK (28).

## (b) DENDROCERATINA.

*Dendroceratina*, **nom. nov.** for order *Hexaceratina* Lendenfeld pars, with diagnosis; MINCHIN (47) p. 154.

## Family APLYSILLIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 154.

## (iv) MYXOSPONGIDA.

Diagnosis; MINCHIN (47) p. 154.

## Family OSCARELLIDÆ.

Diagnosis of family, and list of genera; MINCHIN (47) p. 154.

## Family HALISARCIDÆ.

Diagnosis of family, and list of genera; MINCHIN (47) p. 154.

## E. OCTACTINELLIDA.

Diagnosis; MINCHIN (47) p. 156: order not accepted, the single genus *Astræospongia* regarded as an aberrant Hexactinellid; ZITTEL (82) p. 56.

†*Astræospongia* Roem., genus defined; *A. meniscus* Bumb., figured: ZITTEL (82) p. 56, fig. 72.

## F. HETERACTINELLIDA.

Diagnosis, and list of genera; MINCHIN (47) p. 156: order not accepted, the genera regarded as aberrant Hexactinellids; ZITTEL (82) p. 56.

†*Asteractinella* Hinde, genus defined; *A. expansa*, spicule figured: ZITTEL (82) p. 56, fig. 71.

†*Tholiasterella* Hinde, genus defined; *T. gracilis* Hinde, spicules figured: ZITTEL (82) p. 56, fig. 70.

## G. INCERTÆ SEDIS.

†*Achilleum rugosum* Roem.; ZAHÁLKA (78) pp. 13, 51, 92, 100: ZAHÁLKA (79) pp. 22, 27, 36.

†*Amorphospongia globosa* v. Hag.; ZAHÁLKA (79) pp. 9, 25, 27, 36, 44–48. †*A. rugosa* Roem.; ZAHÁLKA (78) p. 28: ZAHÁLKA (79) pp. 17, 24, 25.

†*Cylindrites spongioides* Goepf. [a sponge]; FUGGER (18) p. 393.

†*Rauffella* (?) *fucoida*, **n. sp.**, from Saint Peter Sandstone; SARDESON (56) p. 78, pl. iv, figg. 5 & 6.

- †*Scyphia parvula* Rss.; ZAHÁLKA (79) p. 44.  
†*Solidinodus poctæi* Zah.; ZAHÁLKA (79) pp. 10-12, 15, 18, 21, 25, 27, 29, 36.  
†*Spongia paradoxica*, from Red Chalk, is not a sponge; JUKES-BROWNE & HILL (25) p. 303.  
†*Spongia saxonica* Gein.; FUGGER (18) p. 393. †*Spongites saxonicus* Gein.; ZAHÁLKA (78) pp. 30 & 92.  
†*Stromatopora* [sic, as a sponge genus]; *S.* sp., pp. 20, 21, 24, 29, 31; *S. mammillata* Nich., pp. 24 & 31; *S. ponderosus* Nich., p. 24: BOWNOCKER (5).  
†“*Syringostroma columnaris* Nich.” [a sponge], pp. 27, 31; “*S. densa* Nich.” p. 33; BOWNOCKER (5).  
†*Tragos globularis*; ZAHÁLKA (79) p. 13.



## XVIII. PROTOZOA.

BY

ALBERT WM. BROWN, B.A., F.L.S.

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## INTRODUCTION.

AFTER a steady decline for some years, the number of titles recorded this time shows a slight increase. The systematic literature consists principally of papers dealing with the *Foraminifera* and *Radiolaria* of which a large number of Fossil forms have been described. The most important work of the year has however been done on the Sporozoa. The researches of LAVERAN, MESNIL, and LIÉGER have added considerably to our knowledge whilst the remarkable forms described by STOLC are worthy of close attention. SAND has published an exhaustive monograph on the Tentaculifera.



Recent discoveries on the Hæmatozoa, especially in relation to disease, have opened up a wide field for research of which many have taken advantage. The discoveries of the relation of the Hæmatozoa to Malarial fever afford a strong justification of the utility of Biological Science. Experiments now in progress with a view to stamping out the disease are being watched with great interest and it is probable that future years will see the pathological relations of Protozoa vigorously investigated.

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## II. BIOLOGY.

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S. Atlantic and S. Indian Ocean: Plankton, *Protozoa* incl. 4 n. spp.; CLEVE (31).

Red Sea: Plankton *Protozoa* incl. n. sp. of *Dinophysis*; CLEVE (30).

Christmas Island [Boat Channel, Flying Fish Cove]: List of *Foraminifera*; CHAPMAN (23).

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# CORRIGENDA.

AVES, p. 35 line 17, delete the words "of life."

MOLLUSCA, p. 89 line 15 from bottom, for "*Ptychorhyncus*" read "*Ptychorhynchus*."

CRUSTACEA. The following memoir was accidentally omitted and will be inserted next year. MALAQUIN, A. Nouvelles recherches sur l'évolution des monstrillides. C.R. Ac. Sci. cxxx, pp. 427-430.

INSECTA, p. 6 line 6 from bottom, instead of "*Lamellicorus* from Greenland," read "*Lamellicorns* from Grenada."

„ p. 152 line 23, for "*Archapila*" read "*Arctapila*."

„ p. 160 line 29, instead of "*Maphæa*" read "*Maphoca*."

„ p. 165: the heading "*Oedemeridæ*" and the line following it should follow the *Zonitis* entry.

„ p. 239 line 11 from bottom, delete "subg. n."

„ p. 318 line 1, instead of "*Pudacus*" read "*Padaeus*."

„ p. 325 line 6 from bottom, delete "n. sp." at the end of the entry.

„ p. 335 line 27, for "*websteriella*" substitute "*Websteriella*."

END OF THE THIRTY-SEVENTH VOLUME.



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*These publications may be obtained at the SOCIETY'S OFFICE (3, Hanover Square, W.), of Messrs. GURNEY AND JACKSON (Paternoster Row, E.C.), or through any bookseller.*

# INDEX-VOLUME OF THE ZOOLOGICAL RECORD.

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THE Council of the Zoological Society has given instructions for the publication of an Index-Volume to the new generic names mentioned in the 'Zoological Record,' Vols. xvii.-xxxvii. (1880-1900).

The Volumes previous to Vol. xvii. have been indexed in the 'Nomenclator Zoologicus' of Scudder, published by the Smithsonian Institution in 1882. The contemplated Index-Volume of the 'Zoological Record,' in order to increase its usefulness, will include names omitted from Scudder's list and from the volumes of the 'Zoological Record.' Thus zoologists may have at their disposal (in the 'Nomenclator Zoologicus' and the new Index together) a complete list of all the names of genera and subgenera used in zoology up to the end of 1900.

It is earnestly requested that any one who knows of names omitted from Scudder's 'Nomenclator,' or from the volumes of the 'Zoological Record,' will forward a note of them, together, if possible, with a reference as to where they have been noticed or proposed, so that the new list may be made practically complete. Such information should be addressed to the Editor of the 'Zoological Record,' 3, Hanover Square, London, W.; or to C. O. Waterhouse, Esq., British Museum, Natural History, S. Kensington, London, who is engaged in compiling the list.

The terms of subscription to the Index-Volume will be to Subscribers to the 'Zoological Record,' 10s.; to other Subscribers, 15s.

Subscribers to the 'Zoological Record' itself should intimate their intention to subscribe to the Index-Volume, as, unless they do so, their names will not be placed on the subscription-list.

A limited number of copies (beyond those required for Subscribers) will be printed. These will be placed at the disposal of the public, at the price of £1 per copy, by the Society, and by Messrs. Gurney & Jackson, 1, Paternoster Row, E.C.

Attention is called to the offer of the Society to supply a complete set of the Record to the end of the nineteenth century, including the Index-Volume, for £15.

The date of closing the subscription-list for the Index-Volume has been extended to January 31st, 1902. *Subscriptions must be paid to the Zoological Society before that date.*

The Volume will be published about March, 1902.

P. L. SCLATER,  
*Secretary.*

Nov. 1st, 1901.

ZOOLOGICAL SOCIETY OF LONDON,  
3, HANOVER SQUARE, W.



# THE ZOOLOGICAL RECORD.

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THE object of the ZOOLOGICAL RECORD is to give, by means of an annual Volume, complete lists of the Works and Publications relating to Zoology in all its branches that have appeared during the year preceding the issue of the Volume, together with full information as to the points they deal with, arranged in such a manner as to serve as an Index to the literature of Zoology in all parts of the globe, and thus to form a repertory which will retain its value for the Student in future years.

The 'Zoological Record' is published for the Society by Messrs. Gurney and Jackson at the price of 30s. per volume. But all Members of the Zoological Society of London have the privilege of receiving it, including the cost of delivery (within the United Kingdom), at a subscription price of 20s. per annum. This Subscription is due on the 1st of July in every year, and the privilege of Subscription is forfeited unless the amount be paid before the 1st of December following.

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P. L. SCLATER,  
*Secretary.*

Nov. 1, 1901.

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